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Bibliography on the Climatology of Northeast Africa

l. 2 October, 1951 No. 10

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 2 OCTOBER 1951 No. 10

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography on Climatology of Northeast Africa

(*For complete table of contents see back cover*)

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ADVANCES IN METEOROLOGY (JULY–SEPTEMBER 1951)

In continuation of the note first published in *Meteorological Abstracts* for July 1951 reference is given here to some items of special interest, mainly published in 1950 and 1951 and included in the issues for July, August and September 1951.

Under **General Meteorology** we note Reports of the Meetings at Toronto of International Commissions on Projections (2.7–18), Maritime Meteorology (2.9–7) and Instruments and Methods of Observation (2.9–10); also of the Regional Commissions III (South America) and IV (North and Central America) (2.7–1). An account of the Japanese Weather Service appears in 2.8–3 and of the Polish Weather Service in 2.8–4. The most noteworthy entry under **Observations** discusses radiosonde data from Manchuria in 1944 (2.7–29). **Instruments** include fundamental properties of actinometers (2.7–35) and a study of methods of determining the CO_2 content of the atmosphere (2.9–35). A revised U. S. Manual of Surface Observations appears in 2.8–14 and an extensive annotated bibliography of instruments (2.8–20). Among the numerous entries under **Forecasting** we note studies of the tracks of depressions (2.7–46), the use of the Eniac computer for mathematical forecasting (2.8–35), methods of using the tendency equation for prediction (2.8–60, 2.8–90), medium range forecasting in South America (2.9–46) and long range forecasting in the East Indies (2.7–43).

Physics of the Atmosphere includes notes on the development of pressure fields (2.7–74, –75), a study of upper air mean values over Berlin and Munich (2.8–46), many important works on the ionosphere, such as 2.7–60, –61, –65 and 2.8–50, –51, –54 and the height distribution of atomic oxygen (2.7–66). Theories of the evolution of the earth's atmosphere are discussed in 2.9–56. Under **General Circulation** a Russian work on the circulation in the Arctic is worthy of mention, though published in 1945 (2.7–78). Other works are 3-dimensional studies of an outbreak of polar air (2.8–65), of Indian thunderstorms (2.8–72), of the upper air and surface circulation of the Far East (2.9–78, –83) and of the jet stream over Canada (2.9–80). We may also mention experimental investigation of cyclones and anticyclones (2.9–72) and a mathematical discussion of the equations of motion (2.9–79). Under **Atmospheric Disturbances** items 2.7–86, –87, 2.8–69, 2.9–88 deal with hurricane dynamics and item 2.9–8 with surfaces of discontinuity.

Radiation includes scattering (2.7–93) and absorption (2.7–94), cosmic radiation and its biological effects (2.9–97). **Temperature** is expressed in terms of energy balance (2.7–114, –115) and computation of vertical motion (2.9–116). Works on **Water Vapor** deal with evaporation of droplets (2.7–130, –131), water content of Cu (2.8–107) and vapor in the stratosphere (2.8–100). Studies of **Precipitation** chart some interesting regions (Chile, Indonesia, Congo) (2.7–135, –136, –137); also coalescence of raindrops (2.8–113, –114, –115), relation of rain to flow pattern in Hawaii (2.9–135) and a cooperative snow investigation in western United States (2.8–120). **Hydrology** of Central Asia is dealt with in 2.8–126 and of British water supply in 2.8–127.

Climatology covers a variety of subjects, including a new climatic study of U.S.S.R. (2.9–154), variations of British climate (2.7–164), weather and the building industry (2.7–176), dynamic climatology (2.8–130, –131), microclimatology (2.8–136, –137) and bioclimatology (2.8–143).

Observation of **Visibility** at night is examined in detail in 2.9–166, **Optical phenomena** in the upper atmosphere (2.7–99) and in different air masses in Montevideo (2.9–173). In **Atmospheric Electricity** the part of thunderstorms in the earth's electrification appears in 2.8–169 and the origin of auroras in 2.7–192. Finally, we may mention tests of the audibility of an explosion in Idaho (2.9–181).—*C.E.P.B.*

FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains from 100 to 200 abstracts of current periodical literature and monographs in the fields of meteorology, hydrology, oceanography, etc. These abstracts are arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of from 50 to 250 important references on a special subject without respect to recency of material. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject. Preference is given to recent material, comprehensive works, material from obscure sources, and items with good bibliographies.

Vol. 1, No. 1–11, Jan.–Nov. 1950 carried the following bibliographies: *Atmospheric Pollution, Aerobiology, Cloud Physics and "Rainmaking," Hail, Tornadoes, Volcanic Dust, Climatic Changes, Thunderstorms, Icing, Acoustical Propagation* and *Evaporation.*

Bibliographies published this year were:

1. **Extended Forecasting,** Vol. 2, No. 1, Jan. 1951.
2. **Long Range Forecasting,** Vol. 2, No. 2, Feb. 1951.
3. **Soil Temperature,** Vol. 2, No. 3, March 1951.
4. **Constants, Units, Tables and Diagrams,** Vol. 2, No. 4, April 1951.
5. **Climate of the Near East,** Vol. 2, No. 5, May 1951.
6. **Climate of the Middle East,** Vol. 2, No. 6, June 1951.
7. **Special Winds,** Vol. 2, No. 7, July 1951.
8. **Radar Storm Detection,** Vol. 2, No. 8, Aug. 1951.
9. **Condensation Trails,** Vol. 2, No. 9, Sept. 1951.
10. **Climate of Northeast Africa,** Vol. 2, No. 10, Oct. 1951.

Forthcoming bibliographies will be:

11. **Mountain Meteorology,** Vol. 2, No. 11, Nov. 1951.
12. None. (Entire issue will be **Cumulative Indexes.**)

Other bibliographies in preparation are:

Actinometers
Carbon Dioxide in the Atmosphere
Climate and Cancer
Climate of Central Africa
Climate of Northwest Africa
Climate of Southeast Asia
Climate of the East Indies
Climatology of South America
Dew
Frost and Frost Forecasting
Machine Methods in Meteorology
Microwave Transmission
Objective Forecasting
Oceanographic Meteorology
Ozone
Stratus Forecasting
Turbulence
Urban Climatology

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the June and December issues cumulative indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where the material may be found. The Union List of Serials (Gregory) is the source of most of the symbols used. In some cases, where no symbol has been assigned to a library, one will be devised according to the principles of the Union List.

Library symbols used in this issue may be found in the following list:

DGS:	U. S. Geological Survey Library, Washington, D. C.
DHO:	U. S. Hydrographic Office Library, Washington 25, D. C.
DLC:	Library of Congress, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society) Library, Milton, Mass.
NN:	New York Public Library, New York, N. Y.
NNA:	American Geographical Society Library, New York, N. Y.
NNM:	American Museum of Natural History Library, New York, N. Y.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
§	before an entry indicates a synoptic case history study accompanied by charts.

Geographic locations are in the English form rather than the form used locally, for example Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwise stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to the Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months are abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Number (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus an entry will read as follows:

Meteorologische Rundschau, 2(5–6):146–151, May–June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vol. 2), *Heft* 5–6 (No. 5 and 6), *pages* 146–151, May–June 1950.

PART I. ABSTRACTS OF CURRENT MATERIAL

GENERAL METEOROLOGY

2.10–1 551.5:061.4

Manley, Gordon, **Royal Society's Conversazione, 24 May 1951.** *Weather*, 6(7):208–209, July 1951. **DWB**—Descriptions of exhibits showing work on deep sea cores, models of a polar front depression, radio echoes from the ionosphere and glacier motion. *Subject Headings:* **Meteorology, Exhibitions.**—*C.E.P.B.*

2.10–2 551.5:37

A brief history of the Department of Meteorology at Massachusetts Institute of Technology. *American Meteorological Society, Bulletin*, 32(3):107–108, March 1951. **MH-BH**—Description of professional training in meteorology since 1928 when ROSSBY and WILLETT set up the first advanced course given in America. Other instructors have been PETTERSSEN, HEWSON, HOUGHTON and STARR. Notable projects: the development of radiosondes and long range forecast techniques, cloud physics and turbulent diffusion research and many other "hot" subjects. *Subject Headings:* **Teaching of meteorology, Massachusetts Institute of Technology.**—*M.R.*

2.10–3 551.5:37

The Spartan School of Aeronautics. *American Meteorological Society, Bulletin*, 32(3):108–110, March 1951. **MH-BH**—First course in meteorology was offered in 1938. The present 12 months course is described in detail. *Subject Headings:* **Teaching of meteorology, Spartan School of Aeronautics.**

2.10–4 551.5:37

The Department of Meteorology, College of Engineering, New York University. *American Meteorological Society, Bulletin*, 32(3):107–108, March 1951. **MH-BH**—Meteorological training at New York University dates back to 1938 and was organized by SPILHAUS, who has been assisted or succeeded by GARDNER EMMONS, J. E. MILLER, B. HAURWITZ, PANOFSKY, JEROME SPAR and others. Investigations now in progress are enumerated. *Subject Headings:* **Teaching of meteorology, New York University.**—*M.R.*

2.10–5 551.5:37

The Department of Meteorology, Florida State University. *American Meteorological Society, Bulletin*, 32(3):110–111, March 1951. **MH-BH**—A new department was established at Florida State University in 1949 under the chairmanship of WERNER A. BAUM, who is assisted by SEYMOUR HESS, T. A. GLEESON and HOLBROOK LANDERS. Synoptic laboratories, library facilities, editorship of *Journal of Meteorology* and undergraduate courses are described briefly. A good photograph of PROF. BAUM is included. *Subject Headings:* **Teaching of meteorology, Florida State University.**—*M.R.*

2.10–6 551.5:6(05)

Germany. Meteorologischer Dienst der Deutschen Demokratischen Republik, **Angewandte Meteorologie. Beihefte zur Zeitschrift für Meteorologie.** Published by Akademie-Verlag, Berlin. First number issued: Band 1, Heft 1, June 1951. **MH-BH**—This new journal, to appear in successive but not necessarily periodical numbers, is edited by PROF. DR. W. KÖNIG, Potsdam, and aims at bringing to the notice of meteorologists the numerous and heterogeneous practical applications of their science. The first number includes five articles (abstracted separately), reviews, etc. *Subject Headings:* **Applied meteorology, Periodicals.**—*C.E.P.B.*

2.10–7 551.5:629.1

Phillips, Reynolds, **Polar commuters.** *Boeing Magazine*, 20(12):10–13, Dec. 1950 illus. **DWB**—Chart shows various weather reconnaissance tracks flown in and around Alask and to the North Pole. Article describes problems of flying over Arctic Ocean. *Subje Headings:* **Aeronautical meteorology, Arctic Ocean.**—*M.R.*

2.10–8 551.5:

Ovey, C. D., **The anatomy of weather.** *Weather*, 6(7):210–212, July **1951. DWB**— References to dimensions of the visible sky-scape, cloud-scapes, avoidance of meteorologica inconsistencies, cloud perspective and the effect of hills. *Subject Headings:* **Meteorology, Art.**— *C.E.P.B.*

2.10–9 551.5:

Munn, R. E., **Describing the skies.** *Weather*, 6(7):203–206, July **1951. DWB**—Afte a reference to "style" in weather forecasts in Canada, some descriptions of clouds in poetr are quoted. *Subject Headings:* **Meteorology, Poetry.**—*C.E.P.B.*

2.10–10 551.5:9

Douglas, C. K. M., **Obituary. Professor V. F. K. Bjerknes. For. Mem.R.S., Hon. Mem R. Met. S., Hon. Mem.R.S.E., Hon. LL.D. (St. Andrews).** *Royal Meteorological Society Quarterly Journal*, 77(333):529–530, July **1951. MH-BH**—*Subject Headings:* **Biography V. F. K. Bjerknes.**—*C.E.P.B.*

2.10–11 551.5:9

Gold, Ernest, **Prof. V. F. K. Bjerknes. For. Mem. R. S.** *Nature*, London, 167(4256):838 839, May 26, **1951. DWB**—Prof. Bjerknes died at Oslo April 9, 1951, aged 89. Th obituary gives an account of his work on dynamical meteorology. Also in *Weather*, 6(7):216 217, July 1951. *Subject Headings:* **Biography, V. F. K. Bjerknes.**—*C.E.P.B.*

2.10–12 551.5:9

Hennessy, J., **Captain L. A. Brooke Smith, R.D., R.N.R.** *Meteorological Magazine* London, 80(946):120–122, April **1951. DLC**—Capt. Brooke Smith was formerly Marin Superintendent of the British Meteorological Office. Died Dec. 21, 1950, aged 72. *Subje Headings:* **Biography, L. A. Brooke Smith.**—*C.E.P.B.*

2.10–13 551.5:9

Pelzl, E., **Nachruf auf Dr. Loni Kassner.** [Obituary of . . .] *Zeitschrift für Meteorologi* 4(10):320, Oct. **1950. MH-BH**—Born Nov. 4, 1902, died Sept. 18, 1950. Her work wa mainly on meteorological instruments. *Subject Headings:* **Biography, Loni Kassner.**—*C.E.P.B*

2.10–14 551.5:9

Steinhauser, Ferdinand, **Reinhard Süring.** *Archiv für Meteorologie, Geophysik un Bioklimatologie, Ser. A*, 3(3–4):339–340, **1951. MH-BH**—Born May 15, 1866, died Dec. 2 1950. Famous for his investigations of upper air, clouds, soil temperature and radiation Editor of *Meteorologische Zeitschrift* and *Zeitschrift für Meteorologie. Subject Heading* **Biography, Reinhard Süring.**—*C.E.P.B.*

2.10–15 551.5(0

Dufour, L., **Ésquisse d'une histoire de la Météorologie en Belgique.** [Sketch of th history of meteorology in Belgium.] *Belgium, Institut Royal Météorologique, Miscellanée* Fasc. 40, **1950.** 55 p. photos., 32 refs. **MH-BH**—A scholarly and thorough treatment c the history of meteorological literature, observation and organizations in Belgium from ancien times up to 1940. Part of this work is taken from the author's previous sketch (*ibid.*, 1947) which covers the period from 1773 to the war of 1914–1918. The present work also covers th classical period, the period of observational or experimental (statistical) meteorology (c 1600–1773) in detail and is based on extensive research into the original manuscripts an sources. The period since 1918 is covered very briefly as the author does not wish his persona

knowledge of the outstanding meteorologists and consequent prejudices to spoil the historical perspective attained in the balance of the work. *Subject Headings:* **History of meteorology, Belgium.**—*M.R.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATIONS

2.10–16 551.501.4(26) 551.582.3(26)

*Gordon, A. H., **Development of modern technique in marine meteorology.** *Meteorological Magazine*, London, 80(945):78–83, March **1951.** fig., 4 refs. **MH-BH**—An account is given of the Hollerith system in the Marine Branch of the British Meteorological Office. Climatological atlases of the oceans are described and their applications in physical and dynamical climatology are listed. These include—diurnal variation of all elements, harmonic analysis of annual variation and studies of the general circulation of the atmosphere. *Subject Headings:* **Methods of computation, Machine methods, Marine atlases.**—*C.E.P.B.*

2.10–17 551.501.45:551.521.3

Bolz, H. M. and Fritz, H., **Tabellen und Diagramme zur Berechnung der Gegenstrahlung und Ausstrahlung.** [Tables and diagrams for calculating counter- and outgoing-radiation.] *Zeitschrift für Meteorologie*, 4(10):314–317, Oct. **1950.** 3 figs., 2 tables, 2 refs., 5 equations. **MH-BH**—The first diagram gives curves of counter-radiation from atmosphere based on σT^4 $(0.82-0.25\times10^{-0.126e})$, e=v.p. in mm. The second gives long-wave radiation from a horizontal black surface and the third gives correction factors for different amounts of various cloud types. *Subject Headings:* **Computation tables, Radiation measurement.**—*C.E.P.B.*

2.10–18 551.501.7

Faust, Heinrich, **Eine einfache Methode zur Bestimmung der Verdunstungslabilität.** [A simple method of determining evaporation lability.] *Zeitschrift für Meteorologie*, 5(3):66–68, March **1951.** 2 tables, 5 refs. **MH-BH**—Referring to author's earlier paper (*see item* No. 11–54 in Nov. 1950 *Meteorological Abstracts*). Evaporation lability is thermal lability decreased by evaporation of cloud droplets. This paper gives a rapid method of calculating it, assuming condensation at 850 mb., from the temperature at 850 mb. and the mean difference of the dew point 850–500 mb. (precise meaning of this not clear). The table gives the temperature at 500 mb. at which evaporation lability is zero. Various corrections are set out. *Subject Headings:* **Methods of computation, Evaporation lability.**—*C.E.P.B.*

2.10–19 551.501.9:629.13

Harrison, H. T., **United Air Lines and its weather service.** *American Meteorological Society, Bulletin*, 32(3):104–107, March **1951.** **MH-BH**—Brief history of and statistics on United Air Lines is followed by a description of the first mobile weather station, used in 1929 in the Cheyenne, Wyoming area. Expansion of activities since Dec. 1937 to the point where UAL now employs 37 meteorologists, and the activities of the Dept. of Meteorology, which includes upper air research, are outlined. *Subject Headings:* **Airline meteorological services, United Air Lines, Mobile weather stations.**—*M.R.*

2.10–20 551.501.7

Measurement of upper winds. *Meteorological Magazine*, London, 80(945):83–86, March **1951.** **DLC**—D. N. Harrison reviewed the assumption that there is a "mean" wind at any level, from which the observed wind departs owing to turbulence and errors of observation; the latter are discussed. F. E. Jones outlined the new radarsonde theodolite. Several other speakers took part. *Subject Headings:* **Upper air wind observation, Radarsonde theodolites.**—*C.E.P.B.*

OBSERVATIONAL DATA

2.10–21 551.506.1:551.21(72)

Fries, Carl, Jr. and Gutiérrez, Celedonio, **Activity of Parícutin Volcano from January 1 to June 30, 1950.** *American Geophysical Union, Transactions*, 32(2):212–221, April **1951.**

7 figs., 5 tables, 3 refs. **DWB**—Various indexes of activity including ash fall are tabulated, with monthly weather summary. No relation was found between volcanic activity and weather. *Subject Headings:* **Climatic data, Vulcanology, Parícutin Volcano, Mexico.**—*C.E.P.B.*

2.10–22 551.506.1:551.582(87)

*Venezuela. Ministerio de Obras Públicas, **Boletín meteorológico bimensual,** No. 1–2, Jan.–Feb. **1950.** 28 p. map, chiefly tables. **MH-BH**—This publication regularly gives bimonthly climatic data for Venezuela. Tables show total precipitation, days on which precipitation occurred, maximum diurnal precipitation and maximum intensity of precipitation for more than 190 stations in 17 states and the federal district. Evaporation data are given for 17 stations in 12 states. Map shows the rainfall network. *Subject Headings:* **Observational data, Climatology, Venezuela.**—*M.L.R.*

2.10–23 551.506.3:551.582:551.46(539.3)

***Rode Zee en Golf van Aden.** [Red Sea and Gulf of Aden.] *Netherlands, (K.) Meteorologische Instituut,* No. 129, [Dec. **1949.**] 26 p. 49×58 cm. Price F 10. **DWB**—Based on the punch card catalog of ship observations maintained by the Netherlands Meteorological Institute and observations from 30 Swedish log books (prior to 1921), charts have been drawn for surface winds, air flow, currents, pressure, air and sea temperatures, gales, tropical cyclones, fog, dust and precipitation for the Red Sea area. Not only isolines for mean values, but actual frequency and standard deviation data are included for each 1° square of latitude and longitude. Nearly half a million observations are summarized and methods of preparation of charts described. (*Same abstract* as 2G–239.) *Subject Headings:* **Climatic data, Marine climatology, Marine atlases, Red Sea, Gulf of Aden.**—*M.R.*

2.10–24 551.506.5(269)

*§Douguet, Max, **Rapport sur les observations faites par le "Commandant Charcot" au cours de sa croisière dans l'Antarctique durant l'été austral 1948–1949.** [Report of the observations made by the "Commandant Charcot" in the course of its cruise in the Antarctic during the austral summer 1948–1949.] France, Service Central Hydrographique, **1950.** 250 p. chiefly illustrative material. **DWB**—The introduction (p. 1–20) gives a description of the cruise with photos of ship and equipment in Antarctic and an excellent map of the route taken from Brest to Adélie Land and back. Section I (p. 21–68) consists in a discussion and charts on the *hydrography* of the cruise. Section II (p. 69–103) does the same for *oceanography* of the expedition. Section III (p. 104–196) consists of a brief discussion of the *meteorology* of the expedition (weather encountered, radiosondes taken in various sections, synoptic conditions, etc.) with elaborate reproduction of the soundings on adiabatic and synoptic charts. Section IV (p. 197–247) takes up radio transmission and atmospheric electricity. *Subject Headings:* **Antarctic expeditions, "Commandant Charcot" cruise, Radiosonde data, Atmospheric electricity, Antarctic.**—*M.R.*

2.10–25 551.506.8(43)

Herbst, W. and Lessmann, H., **Der Witterungsverlauf im Vegetationsjahr 1948/49 und einige seiner Auswirkungen auf Entwicklung und Ertrag von Kulturpflanzen.** [The weather during the vegetation year 1948/49 and its effects upon development and yield of crops.] *Baden, Landeswetterdienst, Argrarmeteorologischer und phänologischer Jahresbericht für das Vegetationsjahr* 1948/49, [n.d.] 10 p. 7 figs., table. German summary p. 9–10. **DWB**—The characteristics of the weather elements and of the drought periods during 1948–49 are described in detail and the physiological effects of drought upon plants and the effect of drought upon the growth and development of crops and upon the potato harvest are discussed. Isohyets of precipitation in the summer of 1949 in southern Baden, diagram of temperature distribution in various localities in Baden in 1949, graph of annual march of soil humidity and characteristics of ground water in 1949 and phenological dates are given. There are appended summaries of studies carried out by Lessmann on climatic formulas, temperature conditions in hilled rows and on the suitability of the mean annual temperature as characteristic of the general bioclimate of southwest Germany. *Subject Headings:* **Phenology, Drought, Baden, Germany.**—*I.L.D.*

2.10–26 551.506.8:635(82)

Ledesma, Néstor René, **La floración del duraznero y su relación con las temperaturas de invierno y de primavera.** [Blooming of the peach tree and its relation to winter and spring temperatures.] *Meteoros*, Buenos Aires, 1(1):73–90, Jan. **1951.** 2 figs., 11 tables, 20 refs. **DWB**—The phenological behavior of 50 varieties of peach trees is studied by examining winter and spring temperatures in 1941–42, 1942–43. It is discovered that spring temperatures have a smaller influence on the beginning and development of flowering than winter temperatures, which if sufficiently cold, significantly retard the time of blooming. The varieties of peach trees are classified according to their requirements of cold, and those having a smaller requirement are recommended for the Buenos Aires area. *Subject Headings:* **Phenology, Horticulture, Argentina.**—*R.S.Q.*

2.10–27 551.506.8

Selishchenskaia, A. A., **Obzor fenologicheskikh nabliudenii za leto 1950 g.** [Review of phenological observations made during the summer of 1950.] *Vsesoiuznoe Geograficheskoe Obshchestvo, SSSR, Izvestiia*, 83(1):84–86, Jan.–Feb. **1951.** 2 figs. **DLC**—In Leningrad summer begins with the blossoming of lilac, usually on June 15 and ends when the leaves lose color, Sept. 15. The summer of 1950 began earlier than usual. The course of atmospheric temperature, rainfall, cloudiness and the frequency of frost are discussed. Phenological data on ripening of fruit, on harvesting of crops and data on the development of insects, etc. are given. *Subject Headings:* **Phenology, Leningrad, U.S.S.R.**—*I.L.D.*

INSTRUMENTS

2.10–28 551.508.26(02)

†Baker, Henry Dean, **Manual on thermometry with emphasis on thermocouple techniques.** East Hartford, Conn., United Aircraft Corp., **1950.** 201 p. numerous figs and refs. **DWB**—A highly technical and detailed treatment of all manner of thermometers, thermocouples or thermistors for measuring temperatures in air, ground, solids, liquids, gases, etc. The work is intended mainly for engineers, instrument and research personnel who are interested in accuracy or sensitivity of measurements or matters of efficiency, performance, etc. Types of instruments broadly based on expansion, radiation or generation or modification of electric currents. Freezing or boiling points, color changes, resistance or other physical properties also are criteria. Scales, constants, tolerances, methods of calibration or recording, circuits, junctions and splices, drilling techniques, precision requirements, material and paints or enamels used to resist corrosion or extremes of temperature, considered. Each chapter has an extensive list of references and detailed illustrations to aid in actual performance. *Subject Headings:* **Thermometry, Thermocouples, Manuals.**—*M.R.*

2.10–29 551.508.5

Kretschmer, E., **Erfahrungen mit einem luftbeheizten Böen- und Windrichtungsschreiber auf dem Fichtelberg.** [Experiences with an air heated gust and wind direction recorder on the Fichtelberg.] *Zeitschrift für Meteorologie*, 5(4):116–120, April **1951.** 4 figs., 4 refs. **MH-BH**—Wind records on Fichtelberg (1214 m.) were interrupted by icing. In 1940 heating was introduced, a filtered current of air passing over an electrical heater inside the mast. Construction and path of warm air, shown by diagram. Quantity and temperature of air are automatically regulated. Apparatus nearly completely successful, specimen record shown. An improved head is suggested. *Subject Headings:* **Wind recorders, Heated anemometers.**—*C.E.P.B.*

2.10–30 551.508.54

IAkushin, N. P., **Izmerenie kolichestva vozdukha v shakhte anemometrami i ikh tarirovanie.** [Measurement of the quantity of air in mines by means of anemometers, and their calibration.] Moscow, Ugletekhizdat, **1948.** 53 p. 27 figs., 10 tables, refs. **DLC**—The velocity field in a mine or shaft, the types of anemometers used to measure the amount of air movement in shafts, and detailed instructions for testing these anemometers are given in this manual. Many illustrations and schematic diagrams, as well as tables for computation and examples are included. The differential anemometer for measuring very light movements

of air is considered at some length. Mechanical and wind tunnel testing methods are described. *Subject Headings:* **Anemometers, Calibration of instruments, Tunnels.**—*M.R.*

2.10–31 551.508.57

Müller, Hans Gerhard, **Ein neues elektrisches Höhenwindmessverfahren.** [A new electrical wind aloft measuring device.] *Germany, Reichsamt für Wetterdienst, Forschungs- und Erfahrungsberichte, Ser. B,* No. 20, **1944.** 16 p. 15 figs., 4 tables, 7 refs. Photostat. (Formerly German *secret.*) **DWB**—An ultra short wave station on the ground sends out an impulse which is reflected from the balloon apparatus, giving the elevation and azimuth angle on the receiver. The principle of the device, evaluation of records, calibration, errors and results are described and compared with other types of equipment in common use. *Subject Headings:* **Upper air wind instruments, Radio direction finders.**—*M.R.*

2.10–32 551.508.71

Schmuck, Adam, **Kilka uwag nad pomiarami temporatury w klatce meteorologicznej.** [Some remarks concerning temperature observations in the meteorological screen.] *Przegląd Meteorologiczny i Hydrologiczny,* Warsaw, No. 1:94–97, April **1948.** 3 tables. English summary p. 5–6. **MH-BH**—Discusses some comparisons between readings of a psychrometer in the screen and Assmann's psychrometer. Differences of air temperature mostly small but in exceptional cases screen was up to 1.4°C. higher than Assmann. *Subject Heading:* **Psychrometers.**—*C.E.P.B.*

2.10–33 551.508.71

Sheppard, P. A. and Elnesr, M. K., **On the direct measurement of humidity mixing ratio and its fluctuations.** *Royal Meteorological Society, Quarterly Journal,* 77(333):450–453, July **1951.** 3 figs., 2 refs., 6 equations. **MH-BH**—An apparatus is described in which rapid variations of humidity mixing ratio are automatically recorded in g./kg. by galvanometer deflections due to dry and wet thermocouples. *Subject Headings:* **Galvanometers, Humidity.**—*C.E.P.B.*

2.10–34 551.508.765 551.578.11

Bowen, E. G. and Davidson, K. A., **A raindrop spectrograph.** *Royal Meteorological Society, Quarterly Journal,* 77(333):445–449, July **1951.** 6 figs., 5 refs. **MH-BH**—Describes a raindrop spectrograph in which drops fall through a wind tunnel on to a moving strip of sensitized paper. It was calibrated to give raindrop diameter in terms of deflection. Some interesting records are shown. *Subject Headings:* **Spectrographs, Raindrop sizes.**—*C.E.P.B.*

2.10–35 551.508.765

Nyberg, Alf, **On liquid water content in fogs and clouds.** *Sweden, Meteorologiska och Hydrologiska Institut, Meddelanden, Ser. B,* No. 6, **1949.** 12 p. 2 figs., table, 12 refs., 3 equations. **MH-BH**—Summarizes history of methods and results. Describes and illustrates an improved apparatus originally devised by KÖHLER in which droplets are evaporated in a heating chamber and change of humidity of the air measured by psychrometer. Liquid content of low fog 0.2–1.2 g/m³. Sources of error and adaptation to aircraft discussed. *Subject Headings:* **Cloud meters, Water content of clouds, Fog.**—*C.E.P.B.*

2.10–36 551.508.765

Perkins, Porter J., **Flight instrument for measurement of liquid-water content in clouds at temperatures above and below freezing.** *U. S. NACA, Research Memorandum,* No. E50J12a, March **1951.** 13 p. 4 figs., 5 refs. **DWB**—The principle of the cooling caused by water as it strikes a heated surface is used to develop an instrument for measuring the liquid water concentration of clouds. The instrument designed for flight measurements in, above or below freezing clouds consists of a small, cylindrical element which can be heated in clear air to temperatures of 475°F. The design, construction and power requirements of the instrument are discussed and illustrated by means of a photograph and a diagram. The calibration of the instrument at an air temperature of 20°F., an air velocity of 175 miles per hour and a surface

emperature in clear air of 475°F. was carried out by the use of rotating multi-cylinders as a asis of measurement. *Subject Headings:* **Liquid water content of clouds, Cloud meters.**—*I.L.D.*

2.10–37 551.508.822

Nagel, F., **Fehler in der Luftdruckmessung mit Radiosonden und ein temperaturkompensiertes Druckmessgerät.** [Error in pressure measurement with radiosondes and a pressure-unit compensated for temperature.] *Meteorologische Rundschau*, 4(3–4):55–59, March-April **1951.** 4 figs., 2 tables, 2 refs. German and English summaries p. 55. **MH-BH**—Author discusses causes of errors in aneroids which may amount to 2 mb. He summarizes investigations of different types of chambers and then describes the construction, working and testing of a compensated pressure unit. Errors were all less than 1 mb. over a range of pressure 870–870 mb. and temperature −71 to +20°C. *Subject Headings:* **Radiosonde errors, Aneroid barometers, Instrumental errors.**—*C.E.P.B.*

2.10–38 551.508.95:546.214

Ehmert, Alfred, **Ein einfaches Verfahren zur absoluten Messung des Ozongehaltes von Luft.** [A simple method for the absolute measurement of the ozone content of air.] *Meteorologische Rundschau*, 4(3–4):64–68, March–April, **1951.** 3 figs., 10 refs. **MH-BH**—A potassium iodide apparatus is described in which titration is replaced by direct electrical measurement of iodine concentration. Its manipulation and the interpretation of the results are explained. *Subject Headings:* **Ozone measurement, Ozone meters.**—*C.E.P.B.*

2.10–39 551.508.952

Morgen, Alois, **Ozonometrie im meteorologischen Dienst.** [Ozonometry in the meteorological service.] *Zeitschrift für Meteorologie*, 5(3):71–73, March **1951.** fig., 5 refs. **MH-BH**—History of ozone measurement near the ground is briefly summarized. An instrument in use at Trier is described, based on potassium iodide reaction method. It is cheap, rapid, easily standardized and suitable for climatological stations. *Subject Heading:* **Ozone meters.**—*C.E.P.B.*

SYNOPTIC ANALYSIS AND FORECASTING

2.10–40 551.509

Mathur, L. S., **Meteorology and weather forecasting.** *Indian Journal of Meteorology and Geophysics*, 2(1):75–78, Jan. **1951.** In Hindi, English summary p. 75. **MH-BH**—A popular radio broadcast on methods of collecting data for forecasting, preparation of weather maps and on long range forecasting. *Subject Headings:* **Weather forecasting, Radio broadcasts, Hindi language.**—*I.L.D.*

2.10–41 551.509

Mull, S., **Usefulness of the science of meteorology.** *Indian Journal of Meteorology and Geophysics*, 2(1):71–74, Jan. **1951.** In Hindi, English summary p. 71. **MH-BH**—A popular radio broadcast on the application of meteorology to agriculture, shipping, etc. *Subject Headings:* **Applied meteorology, Radio broadcasts, Hindi language.**—*I.L.D.*

2.10–42 551.509

Srivastava, M. P., **Meteorology and war.** *Indian Journal of Meteorology and Geophysics*, (1):79–81, Jan. **1951.** In Hindi, English summary p. 79. **MH-BH**—Popular radio broadcast on the development of meteorology, on its value to human activities, in forecasting, weather control, etc. *Subject Headings:* **Military applications, Weather forecasting, Radio broadcasts, Hindi language.**—*I.L.D.*

2.10–43 551.509.1:551.591

Foitzik, Leonhard, **Zur Verschlüsselung der Sichtweite nach dem neuen Sichtschlüssel VV.** [On coding visibility according to the new visibility code VV.] *Zeitschrift für Meteorology*, 5(3):68–71, March **1951.** 2 tables, 5 refs. **MH-BH**—The new VV scale is uneven, the percentage increase from one number to another varying irregularly from 100 to 1.2%.

Author proposes a new scale, 00 to 49 increasing nearly logarithmically (by 33–20%) from 10 m. to 800 km. The x0–x9 scale covers 59 m. to 50 km. If visibility differs in different directions 50 is added. *Subject Headings:* **Visibility codes.**—*C.E.P.B.*

2.10–44 551.509.1:551.579

Hawke, E. L., **Meteorological codes.** *Weather*, 6(6):189, June **1951. DWB**—Some objections to new code for state of ground, especially confusion between ice, slush and snow (code 5–7) and between dry snow and dust (8–9). *Subject Headings:* **Synoptic codes, Hydrometeorology.**

2.10–45 551.509.1

Sobolev, L. G., **Soveshchaniia Mezhdunarodnoĭ Meteorologicheskoĭ Komissii v Parizhe v iiune-iiule 1946 g.** [Meeting of the International Meteorological Organization in Paris in June–July 1946.] *Meteorologiia i Gidrologiia*, No. 3:75–77, **1947. DWB**—Report on the decisions of the meeting including the new code for transmission of observations from ground stations which is presented herewith. The activities affecting the U.S.S.R. and in which representatives of the Soviet Hydrometeorological Society participated are described. (European Regional Commission, Commission on Aeronautics, Meteorology and Synoptic Commission.) *Subject Headings:* **I.M.O. Conferences, Synoptic codes, U.S.S.R.**—*C.K.*

2.10–46 551.509.3

§Reuter, Heinz, **Post war meteorology in Central Europe.** *Royal Meteorological Society, Canadian Branch,* [*Publications*], 1(4), April **1950.** 11 leaves. figs., 2 synoptic charts. Mimeographed. **DWB**—An account of the post-war forecasting services in Germany and Austria, with a description of methods and theories, including the forecast chart, problems of steering mechanism and special methods of forecasting in mountain regions of Austria. Illustrated by charts (March 22–23, 1950) showing deepening process according to Scherhag. *Subject Headings:* **Weather forecasting, Central Europe.**—*C.E.P.B.*

2.10–47 551.509.33:551.575

*Hyman, Harry, **Causes and forecasting of fog at Philadelphia International Airport.** Philadelphia, **1949.** 22 leaves. 11 refs., 8 append. **DWB**—Sixty-four fogs are classified into maritime (24), pre-warm frontal (16), radiation (12), post-cold front (6), front passage (4), etc. Brief descriptions are given of synoptic situations, seasonal frequency (mostly late summer—early fall and spring), location and causes of each type. The various types are analyzed for cause of condensation and source of moisture and 15 cases of no fog discussed. Tables give monthly frequency, type and dates. *Subject Headings:* **Fog formation, Fog forecasting, Philadelphia.**—*C.E.P.B.*

2.10–48 551.509.34:551.577

Laird, Harley B., **Forecasting precipitation on the west slope of Colorado.** *Monthly Weather Review*, 79(1):1–7, Jan. **1951.** 9 figs., 2 tables, 6 refs. **DWB**—Data for spring months (March, April and May) of 1947 and 1948 were used to develop scattergrams for objective criteria and data for 1949 used as independent check. Eleven variables were tested for each of five synoptic precipitation types, and those which proved significant were used in the final combined correlation diagram. These were pressure gradients to west of Colorado, distance of fronts and 700-mb. relative humidity—mainly for Grand Junctions. *Subject Headings:* **Objective forecasting, Precipitation forecasting, Colorado.**—*M.R.*

2.10–49 551.509.34:551.577.37

Raffo, José María, **Pronóstico de las crecientes del Río Paraná.** [Forecasting floods of the Paraná River.] *Meteoros*, Buenos Aires, 1(1):91–98, Jan. **1951.** 3 figs. **DWB**—Multiple correlations of height data for several points along the Paraná are the basis of a method for forecasting floods. *Subject Headings:* **Flood forecasting, Paraná River, Brazil.**—*R.S.Q.*

2.10–50 551.509.5

§Harrison, Henry T., **Results of synoptic tests applied to certain forecasting rules.** *American Meteorological Society, Bulletin*, 32(3):89–96, March **1951.** 8 figs., 9 tables, 6 refs. **MH-**

BH—One of the best practical forecast studies produced in the last 35 years. Twenty-five forecast rules tested for accuracy and results, based on a score or more of cases for each, are listed. For nine of the cases the results were good enough (78%) to warrant use. Synoptic examples are given in addition to verification (or confidence) score for each. The remaining 16 are divided into two categories, 7 listed as "inconclusive" and 9 as doubtful. The latter cases were no more useful than tossing a coin would be. The best verification (100%) was for steering of cyclones (based on 10,000 ft. flow) in the Eastern United States. *Subject Headings:* **Forecast verification, Objective forecasting, Eastern United States.** —*M.R.*

2.10–51 551.509:551.501

Urbani, Marcello, **A proposito di fotografie di carattere meteorologico.** [A proposal for photographs of meteorological nature.] *Rivista di Meteorologia Aeronautica*, 10(3):36, July–Sept. **1950. MH-BH**—A proposal that systematic photographs be made of cloud and weather phenomena, even though not of exceptional nature, for use in later investigations or forecasting procedures. *Subject Headings:* **Cloud photography, Synoptic observation.**—*M.R.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE

2.10–52 551.510.42

Willett, Hurd Curtis, **Some meteorological aspects of air pollution.** *Industrial Hygiene Foundation of America, Inc., Conference on Industrial Wastes, Transactions Bulletin* No. 13:26–37, **1949.** 3 figs. **DWB**—The author discusses some meteorological principles which are involved in the influence of weather factors upon local atmospheric pollution. The rate of atmospheric stability in the intensification of air pollution, the estimation of potential smog hazard and the relationship of weather pattern to pollution are discussed. *Subject Headings:* **Atmospheric pollution, Meteorological elements.**—*I.L.D.*

2.10–53 1.510.555

Isimaru, Yukiti, **The mechanism of the earth's atmosphere. (First and second communications.)** *Geophysical Magazine*, Tokyo, 21(4):269–301, 303–342, Aug. **1950.** 15 figs., 29 tables, 81 refs., 230 equations. **MH-BH**—The earth's atmosphere is regarded as an ellipsoid balancing gravity against centrifugal force. The heat balance is determined by temperature difference equator-pole; mean lapse rate is represented by this/height of tropopause, giving a calculated value of 0.55°/100 m. Relation between height and temperature of tropopause is discussed; tropopause is an oblate ellipsoid of eccentricity 1/579. Seasonal variation and annual mean temperature at earth's surface are discussed mathematically, including effect of land and sea distribution and ocean currents. In Pt. II author regards surface as a sphere; apparent center of gravity 128 km. from geometric center. He calculates shape and temperature distribution of troposphere, ozonosphere and ozonopause (about 50 km.) and ionosphere. Results are in good agreement with those obtained by other methods up to 150 km. and he extends his calculations to 300 km. for latitude 0–90°. The whole paper is a remarkable *tour de force. Subject Headings:* **Mechanics of the atmosphere, Atmospheric structure, Tropopause.**—*C.E.P.B.*

2.10–54 551.510.53:92(09)

Karol', B. P., **D. I. Mendeleev i meteorologiia.** [D. I. Mendeleev and meteorology.] Leningrad, Gidromet. Izdat., **1950.** 35 p. photo, 33 refs. **DLC**—An interesting account of the scientific achievements of this famous chemist and physicist, with numerous references to his works in Russian, French and German, and to his international activities. Of 431 published works of MENDELEEV, at least 32 were of a meteorological nature or were of interest to meteorologists. His chief work along these lines was in the late 1870's and the late 1880's. His earliest work was on the viscosity of gases, barometry, composition of the atmosphere, upper air temperatures and on popularization of meteorology. Later works resulted from a solo balloon ascent to 3500 m. to study effects of an eclipse on upper atmosphere (Aug. 7, 1887). *Subject Headings:* **Dmitriĭ Ivanovich Mendeleev, Biography, Upper air research, History of meteorology.**—*M.R.*

2.10–55 551.510.53

Dobson, G. M. B., **Recent work on the stratosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):488–492, July **1951.** 2 figs., 9 refs. **MH-BH**—After referring to various lines of investigation, author considers immediate problems—general circulation of whole world to 30 km. or higher, radiative equilibrium of upper air, problems of ozone distribution and its variations (observations of ozone by moonlight are illustrated) and humidity of upper air. *Subject Headings:* **Stratosphere, Global circulation.**—*C.E.P.B.*

2.10–56 551.510.53:551.524.7:551.508.822

Kay, R. H., **The apparent diurnal temperature variation in the lower stratosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):427–434, July **1951.** 4 tables, 10 refs. **MH-BH**—From 2 years' data of 4 daily radiosondes at 5 British stations, for levels 150, 100 and 80 mb., differences between means at various hours are tabulated. The apparent daily range varies from about 1.75°K. in winter to 3°K. in summer, symmetrical about noon, and is inversely proportional to pressure. Values calculated from absorption of radiation are only a few tenths of 1°. The discrepancy is attributed to radiation errors of the thermometer. Night cooling 21 h.—3 h. is only about 0.05°/hr. *Subject Headings:* **Stratosphere, Upper air temperatures, Radiosondes.**—*C.E.P.B.*

2.10–57 551.510.53

Great Britain. Royal Meteorological Society, **Discussion. Recent work on the stratosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):474–494, July **1951.** figs., tables, refs. **MH-BH**—Discussion in Feb. 1951. Contributions by Sir Charles Normand, R. Frith, J. S. Sawyer, F. J. Scrase, and G. M. B. Dobson are abstracted separately. Summary in *Meteorological Magazine*, 80(947):142–143, May 1951. *Subject Heading:* **Stratospheric research.**—*C.E.P.B.*

2.10–58 551.510.53:551.515:551.558

§Sawyer, J. S., **The dynamical systems of the lower stratosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):480–483, July **1951.** 2 figs., 5 refs. **MH-BH**—Contours of tropopause closely follow long-wave pattern in westerlies, but flow cannot be purely horizontal and dynamical developments are discussed. Vertical motion is as important as advection in causing changes of temperature in stratosphere. Jet stream and "tropopause funnel" are referred to; the latter is illustrated by tropopause isobars and upper air ascents of May 17, 1949. *Subject Headings:* **Stratosphere, Tropopause, Atmospheric disturbances, Vertical motion.**—*C.E.P.B.*

2.10–59 551.510.534

Normand, Sir Charles, **Some recent work on ozone.** *Royal Meteorological Society, Quarterly Journal*, 77(333):474–478, July **1951.** 2 figs., table, 9 refs. **MH-BH**—Ozone mixing ratio should increase with N. winds and subsiding air, decrease with S. winds and rising air, but it is not yet proved that all ozone changes are due to advection and vertical motion. Data on vertical distribution of ozone, synoptic relations and correlations are summarized, including recent work at Oxford. *Subject Headings:* **Ozone, Synoptic analysis.**—*C.E.P.B.*

2.10–60 551.510.534:551.513

Weiss, Leonard L., **A study of the relation between the amount of ozone and the meridional index.** U. S. Weather Bureau, Special Forecast Section Research Unit, [1945]. 5 leaves, 3 tables. Typescript. **DWB**—Correlation coefficients between the amount of ozone measured at New York and meridional index up to four days lag were calculated for each month of 1941 and for the total year. Also correlation coefficients between ozone measurements and warm and cold flow indexes were computed for the same period, but with a lag of up to six days. The sectional meridional indexes for the North American sector along the 50°N. latitude were used. The data are presented tabularly. It is concluded that insofar as the meridional index is an indicator of the north-south flow, no relation could be found between the ozone values and the flow. *Subject Headings:* **Ozone, Meridional index, Atmospheric circulation.**—*M.R.*

2.10–61 551.510.535:551.571:621.396.11

Phillips, W. Eric, **The permittivity of air at a wave-length of 10 centimeters.** *Institute of Radio Engineers, Proceedings*, 38(1):786–790, July **1950.** 5 figs., 3 tables, 16 refs. **DWB**—Observed values of permittivity of moist air under various conditions of temperature, water vapor content and pressure are in agreement with theoretical static values and confirm belief that water vapor is very important in atmospheric refraction or anomalous propagation of centimeter-radio waves. Wavemeter and method of measurement described. Tables show results of measurement of dry air at sea level and at reduced pressure, of saturated air and of moist air. Work done is preliminary to long term program of correlating meteorological conditions with microwave propagation off the coast of Natal. *Subject Headings:* **Microwave transmission, Water vapor, Natal, South Africa.**—*M.R.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

2.10–62 551.511

Arakawa, Hidetoshi, **The conservation law about the horizontal of the total vorticity.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):170–172, Dec. **1950.** 2 refs., 10 equations. **DWB**—Derives an expression for the horizontal component of total absolute vorticity normal to the wind, giving a conservative property characteristic in the tropics, termed potential shear, important in lateral mixing. *Subject Headings:* **Vorticity, General circulation, Jet stream.**—*C.E.P.B.*

2.10–63 551.511

Arakawa, Hidetoshi, **ROSSBY-HAURWITZ's equation for the conservation of vertical vorticity component in the baroclinic atmosphere.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):173–174, Dec. **1950.** 3 refs., 6 equations. **DWB**—New forms of the Rossby-Haurwitz and Charney equations of conservation of potential vorticity are derived, assuming isentropic frictionless motion. They hold good in a baroclinic atmosphere. *Subject Heading:* **Vorticity.**—*C.E.P.B.*

2.10–64 551.511

Arakawa, Hidetoshi, **The vorticity equations in orthogonal curvilinear coordinates.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):165–169, Dec. **1950.** 5 refs., 6 equations. **DWB**—A highly mathematical paper dealing with the transformation of the vorticity equations to orthogonal curvilinear coordinates, with application to cylindrical and spherical coordinates. *Subject Heading:* **Vorticity.**—*C.E.P.B.*

2.10–65 551.511:551.515.11

Goldie, A. H. R., **Large-scale vortex motion in the atmosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):455, July **1951. MH-BH**—Two criticisms of paper by R. W. James (*see item* No. 9–53 in Sept. 1950 *Meteorological Abstracts*). *Subject Headings:* **Cyclones, Vorticity.**—*C.E.P.B.*

2.10–66 551.511:551.557

Nagel, H., **Zur Stabilitäts-Theorie des geostrophischen Windes.** [On the theory of stability of geostrophic wind.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 3(3–4):229–267, **1951.** 5 figs., 2 tables, 117 equations. German, English and French summaries p. 230–232. **MH-BH**—Refers to a paper by E. Kleinschmidt, "Stabilitätstheorie des geostrophischen Windfeldes," *Annalen der Hydrographie . . .*, 69:305, 1941. Author points out that the stability of a particle at rest depends on the second differential of its potential energy. He sets out an expression for this, lays down certain criteria and discusses two possible forms of indifferent equilibrium and the general case of stability and lability in lat. 50°. The connection between stability and the slope of the isentropic surface is regarded as important for the development of frontal surfaces and instability showers; a numerical example is calculated and interpreted. A table and diagram of the values of the critical function for lat. 50° are given. *Subject Headings:* **Mechanics of the atmosphere, Geostrophic winds, Stability.**—*C.E.P.B.*

2.10–67 551.511

Raethjen, Paul, **Über den zweidimensionalen Impulsaustausch rotierender Systeme.** [On the two-dimensional exchange of rotating systems.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 3(3–4):173–228, **1951.** 5 figs., 3 tables, 138 equations, 15 refs. German, English and French summaries p. 173–175. **MH-BH**—This difficult mathematical discussion of mass exchange begins with a series of definitions. Owing to the unequal supply of heat, mostly by insolation, exchange is not equal in all directions but takes place mainly along a "preferred axis" which in the planetary exchange is N–S. This is elaborated in Pt. II on the assumption that the air mass moves as a whole, either horizontally or with a vertical gliding component. In Pt. III this is modified by the introduction of "exchange gradient winds" and a "coefficient of monotrophy" is defined. "Geostrophic winds" are regarded as austausch motions of the atmosphere. Pt. IV considers large-scale vortical exchange; in the absence of friction air masses moving rapidly N. or S. retain nearly constant vorticity. Finally, Pt. V discusses the planetary circulation from the point of view of two-dimensional exchange. Taking account of surface friction, the planetary austausch at 250 gdm. is calculated and a model meridional section up to 25 km. is constructed. The findings are related to the planetary west winds and other features. *Subject Headings:* **Planetary circulation, Energy exchange, Definitions.**—*C.E.P.B.*

2.10–68 551.511:551.58

Sherman, Leon, **On permanent perturbations of zonal atmospheric motion, with applications to low latitudes.** *Journal of Meteorology*, 8(2):84–94, April **1951.** 11 figs., 18 refs., 35 equations. **MH-BH**—By using the vorticity equations (in terms of velocity and density alone) and the continuity equations to form a set of four scalar equations in four dependent variables, the vertical and meridional motions in the lower layers of the atmosphere are shown to have a positive intercorrelation. Application is made to steady waves on Northern Hemisphere anticyclones in the subtropics. A model is set up and arbitrary values assumed to show reality of theory. *Subject Headings:* **Mechanics of the atmosphere, Zonal circulation, Easterly waves, Vertical motion, Tropical meteorology.**—*M.R.*

2.10–69 551.511

Virgo, S. E., **Conditional instability over the Highlands of Scotland.** *Meteorological Magazine*, London, 80(945):88–89, March **1951.** fig. **DLC**—Gives tephigram of radiosonde on Oct. 26, 1950 in a southerly air stream. An irregular cloud top at 7000–10,000 ft. is attributed to saturation and instability, caused by lifting air by 70 mb. *Subject Headings:* **Instability, Scottish Highlands.**—*C.E.P.B.*

GENERAL CIRCULATION

2.10–70 551.513

Gambo, K., **The criteria for stability of the westerlies.** *Tokyo, University, Geophysical Institute, Geophysical Notes*, 3(29), **1950.** 13 p. 6 figs., table, 4 refs., 42 equations. Also in *Collected Meteorological Papers*, Tokyo, 2(2), Dec. **1950.** In English. **MH-BH**—Starting with the criterion for stability, that amplitudes of velocity components in x and y directions oscillate with time, author derives functions which he reduces to rate of horizontal shear of the westerlies. Values of this function are tabulated for waves of different lengths and different shears, and critical curves are given for various latitudes. Author's criteria agree with CHARNEY's. *Subject Headings:* **Stability, Waves in the westerlies, General circulation.**—*C.E.P.B.*

2.10–71 551.513:551.515

Palmén, Erik Herbert, **The rôle of atmospheric disturbances in the general circulation.** *Royal Meteorological Society, Quarterly Journal*, 77(333):337–354, July **1951.** 11 figs., 2 tables, 27 refs., 15 equations. **MH-BH**—The meridional transfer of angular momentum is divided into flux due to rotation of the earth, which vanishes over a long period, and transport of relative momentum, including "drift" and "eddy flux" terms. Main source is (sub) tropical E. wind belt. The drift term requires circulation cells in meridional plane and a + correlation

between mean zonal and ageostrophic meridional parts, i.e. poleward drift mainly in strong W. wind layers near tropopause, and equatorward in lower troposphere. Hence, strongest W. wind must be in upper troposphere around 30° (upper jet stream). This is only a small part of total transport of momentum; bulk is due to eddy flux term which depends on large scale disturbances. Calculations from cyclones and anticyclones give satisfactory values. The mechanism is discussed on the basis of ageostrophic winds in troughs in the upper westerlies, with a 3-dimensional analysis of a discontinuous cold air outbreak over the United States. An attempt is made at a schematic representation of the mean meridional winter circulation in the troposphere. *Subject Headings:* **General circulation, Atmospheric disturbances, Transport of momentum, Eddy flux, Troposphere.**—*C.E.P.B.*

2.10–72 551.513.1

Kasahara, A., **On the dynamical mechanism of the high tropospheric jet stream.** *Tokyo, University, Geophysical Institute, Geophysical Notes*, 3(31), **1950.** 10 p. 6 figs., 2 tables, 13 refs., 17 equations, append. Also in *Collected Meteorological Papers*, Tokyo, 2(2), Dec. **1950.** In English. **MH-BH**—The present theory of upper west winds assumes conservation of total absolute vorticity in one hemisphere. Author calculates zonal wind distribution, reaching Rossby's solution in a different way. Assuming a discontinuity of vorticity in lat. 38°, he obtains good agreement between calculated and observed zonal profiles with a cusp of W winds about 90 m.p.h. in lat. 38° and E winds south of 22°. He then sets out theorem of conservation of absolute vorticity and deduces the existence of one or more jet streams and the northward shifting of the jet stream with the decrease of total momentum from winter to summer. *Subject Headings:* **Jet stream, Vorticity.**—*C.E.P.B.*

2.10–73 551.513.1:551.511

Magata, M., **On the structure of the jet stream.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):175–187, Dec. **1950,** 4 figs., tables, 3 refs., 42 equations. **DWB**—From the simple equations of motion referred to rectangular coordinates, and the temperature and density fields, the equations of the wind field are derived. A model of the jet stream is calculated which reproduces the main observed features qualitatively, including an upward bulge in the tropopause south of the jet and a downward bulge to the north, but the calculated maximum velocity is only about 55 m./sec. instead of 80. This excess velocity must be produced and maintained by the general circulation. *Subject Headings:* **Jet stream, General circulation.**—*C.E.P.B.*

2.10–74 551.513.1

Holmboe, Jörgen, **On dynamic stability of zonal currents.** *Journal of Marine Research*, 7(3):163–174, **1948.** 7 figs., 6 refs., 36 equations. **DLC**—This paper discusses mathematically the effect of a small vortex ring perturbation in a steady zonal current. If the resultant (centrifugal+gravitational) buoyancy has a linear vector component opposite to the meridional displacement, the vortex is stable; if they are in the same direction, it is unstable. The directions of maximum and minimum stability and their magnitudes are determined graphically. *Subject Headings:* **Atmospheric circulation, Zonal perturbations.**—*C.E.P.B.*

ATMOSPHERIC DISTURBANCES

2.10–75 551.515(99)

Wood, C. A., **Antarctic front.** *Weather*, 6(5):137–143, May 1951. fig., 16 refs. **DWB**—Popular account of winds and cyclones over Antarctic Ocean and katabatic winds over the continent, with discussion of various theories. *Subject Headings:* **Cold fronts, Katabatic winds, Cyclones, Antarctic.**—*C.E.P.B.*

2.10–76 551.515.11:551.586

Mügge, Ratje, **Das Wesen der Wetterfronten.** [The mechanism of weather fronts.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 5:80–88, 1951. 6 figs. **MH-BH**—A summary of the theory of fronts and upglide zones, and arrangements of surfaces of pressure and equipotential temperature. A simple scheme of weather phenomena for biological

purposes is not possible. Dynamic lability, regarded by some as a measure of meteorotropism, is very closely related to distribution of potential temperature. *Subject Headings:* **Dynamics of the atmosphere, Fronts, Bioclimatology.**—*C.E.P.B.*

2.10–77 551.515.2:551.506.2(52)

Arakawa, Hidetoshi, **Aerological observations made in the typhoon KITTY by the Central Meteorological Observatory, Tokyo.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4): 217–221, Dec. **1950.** 2 figs., 6 refs. **DWB**—During passage of typhoon Aug. 27–Sept. 2, 1949, good radiosonde and rawin observations were obtained giving the best picture yet of the vertical structure of a typhoon. This is summarized in diagrams to 16 km. giving: 1) temperature, potential temperature and vertical motion; 2) isobaric surfaces and circulation accelerations. *Subject Headings:* **Typhoons, Upper air data.**—*C.E.P.B.*

2.10–78 551.515.21:551.578.12(52)

Kasahara, A., **On the distribution of the amount of rainfall and filling-up of the "Kitty-Typhoon."** *Tokyo, University, Geophysical Institute, Geophysical Notes*, 3(30), **1950.** 6 p. 7 figs., table, 3 refs., 3 equations. Also in *Collected Meteorological Papers*, Tokyo, 2(2), Dec. **1950.** In English. **MH-BH**—The distribution of rainfall in the Japanese typhoon of Aug. 27–Sept. 1, 1949 is calculated by Syono's expression for vortical rain (*see item* No. 2.9–88 in Sept. 1951 *Meteorological Abstracts*). Time-distance sections of the typhoon at 4 places show wind speed and calculated and observed rainfall, the latter in fair agreement. The rate of filling up was about 10 mb./hr., this is only $\frac{1}{5}$ of the horizontal mass convergence; the remaining $\frac{4}{5}$ is carried up by the vertical current. *Subject Headings:* **Typhoon mechanics, Rainfall distribution.**—*C.E.P.B.*

2.10–79 551.515.3(54)

George, C. A., **Dust-squalls at Madras.** *Indian Journal of Meteorology and Geophysics*, 2(1):67–69, Jan. **1951.** 2 figs., table, ref. **MH-BH**—The synoptic conditions associated with dust squalls that occurred at Madras during 1948–1949 are discussed. In order to forecast dust squalls during the early summer at Madras it is necessary to look for the occurrence of thundersqualls over the Deccan Plateau. *Subject Headings:* **Dust storms, Dust storm forecasting, Madras, India.**—*I.L.D.*

2.10–80 551.515.3:551.511

Lacaze, Jean, **Aspect convectif des tourbillons de sable d'axes verticaux.** [Convective aspect of vertical dust whirls.] *Académie des Sciences, Paris, Comptes Rendus*, 231(23):1329–1331, Dec. 6, **1950.** **DWB**—Dust whirls with vertical axes represent a distinct type of convection. The excess of heat and caloric capacity of the sand in the whirl contribute a material portion of the energy needed. *Subject Headings:* **Dust devils, Thermodynamics of the atmosphere.**—*G.C.B.*

2.10–81 551.515.4:551.506.1(759,771)

Battan, Louis J., **The "Thunderstorm-Project" data.** *American Meteorological Society, Bulletin*, 32(1):27–29, Jan. **1951.** 2 figs., 2 tables, 2 refs. **MH-BH**—A brief description of the vast amount of observational material obtained between 1945 and 1949 by the Thunderstorm Project in Florida and Ohio. The networks are shown on charts of the respective areas and the types of aircraft, radar, visual, photographic (cloud) and other data for both the surface and upper air are tabulated and the instruments used and period of record given. The data are available in the U. S. Weather Bureau, C and H5 Division in Washington, D. C. *Subject Headings:* **Thunderstorm Project, Observational data, Florida, Ohio.**—*M.R.*

2.10–82 551.515.41(54)

Newton, C. W., **Note on the mechanism of Nor'westers of Bengal.** *Indian Journal of Meteorology and Geophysics*, 2(1):48–50, Jan. **1951.** 9 refs. **MH-BH**—The conclusions of Desai and Mal on the mechanism of nor'westers of Bengal are shown to be confirmed by the work of Byers, according to which the typical thunderstorm is an aggregate of coexistent

updrafts and downdrafts. The thunderstorm area is regarded as a region of vertical mixing of horizontal momentum through the alternate upward movement of SE momentum and downward movement of NW momentum. A schematic diagram of nor'wester thunderstorm is given. *Subject Headings:* **Thunderstorm dynamics, Nor'westers, Bengal, India.**—*I.L.D.*

2.10–83 551.515.4:523.74(43)

†Trenkle, Hermann, **Der jährliche und säkulare Gang der Gewitterhäufigkeit im Hochschwarzwald 1869–1883, 1887–1950.** [Annual and secular thunderstorm frequency variations in the upper Black Forest 1869–1883, 1887–1950.] *Baden, Landeswetterdienst, Jahresbericht mit Abhandlungen*, **1950.** p. 85–97. 5 figs., tables, 33 refs. **DWB**—The mean daily frequency of thunderstorms has been determined in the upper Black Forest on the basis of 79 years of record. The annual course of thunderstorm frequency is analyzed statistically and the secular course of thunderstorms discussed in relation to sunspot cycles. *Subject Headings:* **Thunderstorm frequencies, Sunspots, Black Forest, Germany.**—*I.L.D.*

2.10–84 551.515.4:551.594

Wichmann, Heinz, **Die Weltgewittertätigkeit und das luftelektrische Feld der Erde.** [World thunderstorm activity and the atmospheric electric field of the earth.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 3(3–4):290–302, **1951.** 8 figs., 9 refs., equation. German, English and French summaries p. 290–291. **MH-BH**—Discusses problem of maintenance of earth's normal potential gradient by negative corpuscular radiation or lightning. The latter is the more plausible but the diurnal variation does not agree with that of world thunder activity. The latter is only qualitative, however, and is not known over the open oceans, while diurnal variation of long wave radio reception (effect of ionization of upper atmosphere) and of potential gradient at great heights show that surface values are not representative. Mountain observations are also discussed. *Subject Headings:* **Thunderstorms, Potential gradient, Ionization.**—*C.E.P.B.*

2.10–85 551.515.7(42)

Wood, C. A., **Blue skies around the corner.** *Weather*, 6(1):3–10, Jan. **1951.** 5 figs., 4 photos. **DWB**—A popular account of anticyclones and their weather in England. *Subject Headings:* **Anticyclones, England.**

2.10–86 551.515.8:551.524.7(71)

Burbidge, F. E., **The modification of continental polar air over Hudson Bay.** *Royal Meteorological Society, Quarterly Journal*, 77(333):365–374, July **1951.** 2 figs., 6 tables, 6 refs., 2 equations. **MH-BH**—Recent exploration has shown that in mid-late winter Hudson Bay is almost entirely ice covered. Effect of this on climate is shown. Up to Nov. winds are markedly warmed by the time they reach shore, but there is no effect in Jan.–May. Snowfall on coast is heavy (33 in.) in Nov. but slight (2.8 in.) in Feb. There is a double cloud max. Nov. and May. In summer warm air is cooled over the Bay. Changes of vertical structure of P_e air are described; in early winter lower layers become unstable, in midwinter there is no modification, and in summer only a thin surface layer is stabilized. *Subject Headings:* **Polar fronts, Upper air temperatures, Hudson Bay.**—*C.E.P.B.*

2.10–87 551.515.8:551.524.4:551.521.32(261)

Craddock, J. M., **The warming of arctic air masses over the eastern North Atlantic.** *Royal Meteorological Society, Quarterly Journal*, 77(333):355–364, July **1951.** 4 figs., 2 tables, 7 refs. **MH-BH**—The gain of heat over the sea was examined in 28 cases of cold air masses, travelling from Reykjavik to British Isles, using radiosonde ascents at each end. The heat gain was calculated up to convective limit; typical value 47 cal./cm$_2$/hr. Vapor content and rate of evaporation were also calculated. The fluxes of heat and water vapor were plotted against mean temperature difference water-air giving linear relations. Other factors in gain of heat are rejected in these cases except for a small addition for radiative effects. *Subject Headings:* **Air masses, Vertical temperature gradient, Radiation, North Atlantic Ocean.**—*C.E.P.B.*

2.10–88 551.515.8:551.576.1(744)

Malkus, Joanne Starr, Bunker, Andrew F. and McCasland, Kenneth, **A formation of pileus-like veil clouds over Cape Cod, Massachusetts.** *American Meteorological Society, Bulletin*, 32(2):61–66, Feb. **1951.** 4 figs., 10 refs. **MH-BH**—A study of the formation and microstructure of a cumulus cloud veil formed on a sea breeze front in the Cape Cod region, based on a striking case on July 24, 1950. Data obtained from synoptic charts and reports and from airplane soundings and photographs are compiled and presented in a logical and interesting manner, with cross sections, adiabatic charts and reproduction of temperature traces made in flight. *Subject Headings:* **Sea breeze fronts, Cumulus clouds, Cloud formation, Turbulence, Cape Cod, Massachusetts.**—*M.R.*

2.10–89 551.515.81(4)

John, Horst, **Dynamische Betrachtungen über einen Kaltlufttropfen.** [Dynamic considerations on a cold air bubble.] *Zeitschrift für Meteorologie*, 5(3):73–77, March **1951.** 4 figs., 5 refs. **MH-BH**—The cold air mass over Europe April 13–May 5, 1942, is investigated aerologically. It originated as a tongue from a polar air mass, cut off by an extending anticyclone. It extended from 1500–8000 m., with a warm island above in the stratosphere. Calculated vertical components are shown up to 15 km.; upward currents up to 3.2 cm./sec. were found at centers of maximum horizontal wind velocity. Air above 8 km. was rising to west and sinking to east; cloud and rain support this. A vector Z is calculated, showing a cyclonic structure in upper troposphere. This leads to a circulation scheme of three superposed members. *Subject Headings:* **Air masses, Cyclone structure, Europe.**—*C.E.P.B.*

RADIATION AND TEMPERATURE

RADIATION

2.10–90 551.521:551.574:551.524

Defant, Friedrich, **Kondensationswärme und Strahlungsbilanz in einem mittleren Meridionalschnitt der Troposphäre.** [Heat of condensation and radiation balance in an average meridional section of the troposphere.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 3(3–4):268–289, **1951.** 8 figs., 8 tables, 8 refs., 9 equations. German, English and French summaries p. 268–269. **MH-BH**—Author calculates vertical variation of mean heat content Q of the air per cc. up to 11 km. from heat of condensation (on two alternative assumptions) and radiation balance, the total adjusted to a mean lapse of 0.574°/100 m. The distribution of Q by latitude (Northern Hemisphere) is next discussed with alternative sections, using the zonal rainfall smoothed by spherical harmonics. These are compared with values calculated by Albrecht by different methods which gave a different vertical distribution. Defant's calculated temperature lapse agrees better with observed lapse. *Subject Headings:* **Radiation balance, Condensation, Vertical temperature gradient.**—*C.E.P.B.*

2.10–91 551.521.1:551.510.53/5:550.38

Ferraro, V. C. A., **Solar influences on geomagnetism and on the upper atmosphere.** *Commission pour l'Étude des Relations entre les Phénomènes Solaires et Terrestres, Sixième rapport*, Orléans, France, p. 71–73, **1948.** 8 refs. In English. **MH-BH**—Briefly describes work on induction of electric currents in a neutral ionized stream of solar particles in the earth's magnetic field and diffusion in the ionosphere, which is found to be slight. The F2 layer is considered to have 10^{10} mol./cc. at a temperature of 1000°K. *Subject Headings:* **Solar radiation, Upper atmosphere, Terrestrial magnetism.**—*C.E.P.B.*

2.10–92 551.521.11

Glasspoole, John and Hancock, D. S., **Sunshine in the British Isles.** *Royal Meteorological Society, Quarterly Journal*, 77(333):454, July **1951.** fig. **MH-BH**—Illustrates a diagram of cumulative excess or deficiency of sunshine over the British Isles 1909–48. *Subject Headings:* **Sunshine, Great Britain.**—*C.E.P.B.*

2.10–93 551.521.14

Fritz, Sigmund, [**Reply to article**] **Radiation in the troposphere and lower stratosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(333):455–456, July **1951. MH-BH**—Remarks on discussion of albedo of clouds by GOODY and ROBINSON (*see abstract* No. 2.6–63 in June 1951 *Meteorological Abstracts.*) *Subject Headings:* **Radiation, Albedo of clouds.**

2.10–94 551.521.16:636

Hafez, E. S. E., **Die Brunstzeit (breeding season) bei Schafen in Beziehung zur Tageslänge in nördlicher und südlicher Breite.** [The breeding season of sheep in relation to length of day in northern and southern latitudes.] *Naturwissenschaften*, 38(4):100–101, Feb. **1951.** 2 figs. **DWB**—Breeding activity is influenced by length of day as well as climate, the maximum being nearly symmetric about a point shortly before shortest day. *Subject Headings:* **Daylight illumination, Sheep breeding.**—*C.E.P.B.*

2.10–95 551.521.16 551.593.7

Packer, D. M. and Lock, C., **The brightness and polarization of the daylight sky at altitudes of 18,000 to 38,000 feet above sea level.** *U. S. Naval Research Laboratory, Report* 3731, July 31, **1950.** 59 p. 4 figs., table, 10 refs., append. 67 figs., 4 tables. **MH-BH**—Observations of sky brightness and polarization were made from aircraft at 18,000–38,000 ft. above Arizona and southern California March–May 1948. Solar illumination was about 10,500 ft. candles and atmospheric attenuation 0.15–0.3/km. (NTP). Tables and diagrams give sky brightness and polarization at different heights, solar and zenith distances; curves are drawn to fit the observations and also those given by the Tousey-Hulbert (1942, 1947) theory of sky brightness, with an attenuation coefficient of 0.17. The values observed within 30° of the sun show the presence of large scattering particles at all heights. Observations of sky color and some high-level cloud notes are included. *Subject Headings:* **Sky brightness, Polarization.**—*C.E.P.B.*

2.10–96 551.521.2

Masaki, Hikaru, **On the measurement of atmospheric radiation by using infra-red filters.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(10):384–389, Oct. **1950.** 4 figs., 2 tables, 14 refs., 5 equations. In Japanese, English summary p. 389. **MH-BH**—The net outward flow of energy from the earth's surface as infrared radiation between 5 and 25μ was measured by day and night by passing through films on which powdered MgO, LnO, NH_4Cl and quartz were deposited. These scatter short wave sky radiation but pass infrared. The results are compared with the black-body curve. *Subject Headings:* **Terrestrial radiation, Atmospheric radiation.**—*C.E.P.B.*

2.10–97 551.521.3

Doppler effect in light-scattering. *Current Science*, Bangalore, 20(2):34, Feb. **1951. MH-BH**—Brief note on findings of author and other scientists in India on the frequency shift of light due to thermal motion of molecules. Observations of H_2, O_2, N_2 and CO_2 show agreement with FRENKEL's hole theory of liquids. Other experiments were made on hyper and supersonic velocities in liquids. *Subject Headings:* **Scattering of light, Döppler effect.**—*M.R.*

2.10–98 551.521.3:551.510.534

Maeda, K., **On the Umkehr effect in zenith-scattered sunlight and the vertical distribution of ozone in the atmosphere.** *Geophysical Magazine*, Tokyo, 21(4):343–355, Aug. **1950.** 4 figs., 3 tables, 6 refs., 14 equations. **MH-BH**—The *Umkehr* (reversal) or Götz effect is that light from the zenith sky is relatively richer in UV when sun is near horizon than when it is a few degrees up. Author calculates scattering in standard atmosphere with ozone distribution according to GÖTZ of waves of 3110 and 3290Å for solar zenith distances 70–88° and finds that primary scattering by ozone alone is not sufficient. *Subject Headings:* ***Umkehr* effect, Scattering of light, Ozone distribution.**—*C.E.P.B.*

2.10–99 551.521.4:551.594.5

†Khvostikov, I. A., **Svechenie nochnogo neba.** [Light of the night sky.] 2nd rev. ed. Price 27 rubles. Moscow, Akademiia Nauk, **1948.** 495 p. plates, diagrs., 434 refs., equations. **DLC**—A most intensive and comprehensive text dealing with recent problems of the upper atmosphere such as the aurora, light of the night sky, the green line in the spectrum of the night sky and aurora, atomic dissociation of nitrogen, oxygen and sodium, infrared radiation of the night sky, twilight phenomena associated with fluorescence or selective refraction, photometric analysis of zodiacal light, etc., polarizations of green line and other radiation, theories of light of the night sky, temperature in layers <120 km. and 100–250 km. meteor trails, sunlit auroras, noctilucent clouds and many other problems. *Subject Headings:* **Light of the night sky, Auroras, Twilight phenomena, Upper atmosphere research, Bibliographies.**—*M.R.*

TEMPERATURE

2.10–100 551.524:63

Keränen, J., **Lämpötalous ja lämpötila maatalousilmastollisina tekijöinä Suomessa.** [Heat economy and temperature as agroclimatic factors in Finland.] *Terra,* Helsinki, 54(1–2):132–151, **1942.** 6 figs., 3 tables, 23 refs., equation. In Finnish, German summary p. 150–151. Reprint available. **MH-BH**—Incoming radiation and its effects and heat economy are discussed, taking account of the large diffuse radiation in the north, which is important for plants. Soil moisture, soil type, plant cover, slope and water surfaces all affect the heat economy. The accumulated and effective sums of temperature are mapped for the vegetation period. The mildness or severity of the winter is also very important for vegetation and harvests, especially in the north. The night frost problem is discussed. *Subject Headings:* **Temperature, Energy exchange, Agricultural meteorology, Finland.**—*C.E.P.B.*

2.10–101 551.524.3

Deacon, E. L. and Groodin, I. S., **Continentality of the Australian climate.** *Weather,* 6(7):221–222, July **1951.** fig., tables. **DWB**—Gives figures of change of temperature from one day to next, monthly and daily range at New York, Adelaide and Melbourne and thermohygrograph of a sudden change at Highett, Victoria. *Subject Headings:* **Temperature variations, Australia.**—*C.E.P.B.*

2.10–102 551.524.33:523.74

Voigts, Heinrich, **Gang der Jahresmitteltemperaturen und Sonnenfleckenzyklus.** [Variation of mean annual temperature and sunspot cycle.] *Zeitschrift für Meteorologie,* 5(4):110–116, April **1951.** 3 figs., 4 tables, 5 refs. **MH-BH**—Long period annual means of temperature at stations in Europe are tabulated according to position of the year in the sunspot cycle and classified into 4 types: north European and Mediterranean with double oscillation, pure Atlantic and central-east European with single oscillation. Variation is also compared with $100(F/F_0 - L/L_0)$ where F is area of faculae and L area of sunspots; F_0, L_0 are long period means, which shows a double oscillation in sunspot cycle. Phenological record at Lübeck shows periodicities of 7, 8 and 11 years. Cold winters and dry summers also discussed. *Subject Headings:* **Temperature variations, Sunspot cycles.**—*C.E.P.B.*

2.10–103 551.524.4 551.571.4

Temperature and humidity in the lowest hundred meters of the atmosphere. *Meteorological Magazine,* London, 80(946):109–111, April **1951. DLC**—A. C. Best described measurements of temperature and humidity on a 350 ft. tower at Rye, Sussex. Most frequent lapse of temperature is between saturated adiabatic and zero. Humidity lapse is greatest in summer, when lapse and absolute humidity both have two maxima, just after sunrise and in afternoon. A number of other speakers took part. *Subject Headings:* **Humidity lapse rate, Vertical temperature gradient.**—*C.E.P.B.*

2.10–104 551.524.4 551.571.4 551.554 551.521.3

Rider, N. E. and Robinson, G. D., **A study of the transfer of heat and water vapour above a surface of short grass.** *Royal Meteorological Society, Quarterly Journal,* 77(333):375–401, July **1951.** 8 figs., 6 tables, 23 refs., 10 equations. **DWB**—Observations at Kew of air tem-

perature and humidity and wind speed at 7–8 points 4–200 cm. above surface (tabulated in appendix) are used to establish profiles. Wind and sometimes temperature showed discontinuities between 25 and 37 cm., humidity showed much scatter. Heat absorbed in soil and radiative flux also measured. Coefficients of eddy diffusion of heat and water vapor were independent of height and inferred nearly equal. Fluxes were computed by heat balance and by an aerodynamic method. The rapid fluctuations of temperature are illustrated. Absorption of radiation by air has an effect comparable but opposed to convection. Humidity changes and formation of radiation fog are next considered. New values for the critical Richardson number in profiles of light wind are proposed. *Subject Headings:* **Energy exchange, Radiation fog, Wind profiles.**—*C.E.P.B.*

2.10–105 551.524.4:551.554:551.551:536.2

Vehrencamp, John E., **An experimental investigation of heat and momentum transfer at a smooth air-earth interface.** California, University, Dept. of Engineering, May **1951.** 53 leaves. 30 figs., 22 refs., 19 equations. [Office of Naval Research, Contract N6-ONR-275, To. VI NR-082-036.] **DWB**—Calculations of heat and momentum transfer made from micrometeorological data obtained over the smooth, dry bed of El Mirage Lake, Calif., during the week of June 5–12, 1950. Several new instruments were tried and further improvements in instrumental construction and technique recommended. Vertical convective heat transfer rates were obtained from measurements made on the earth's surface with a radiometer and in the ground with a heat meter. Shear stresses were measured with a shear meter. Results compared with those of PASQUILL, POPPENDIEK and SHEPPARD over grass, disced and concrete surfaces, respectively. Equipment and results are well presented. *Subject Headings:* **Turbulent diffusion, Energy exchange, Shear stresses, Heat conductivity.**—*M.R.*

2.10–106 551.524.7:551.510.52

Holzapfel, Rupert, **Zum Mechanismus des täglichen Temperaturganges in den Stockwerken der Troposphäre.** [On the mechanism of the diurnal variation of temperature in the layers of the troposphere.] *Meteorologische Rundschau,* 4(3–4):59–62, March–April, **1951.** fig., 17 refs. **MH-BH**—Mechanism of diurnal variation of temperature in free air is confused by advection. During Berlin airlift radiosonde ascents were made 4 times a day and author examined days when advection was a minimum, especially radiation days. Results are shown in schematic diagram. There are nearly always three main layers, each containing a main cloud level and the cloud-free space below. Each layer is a closed system with its own circulation and temperature variation which decreases and lags upwards. In transition layers the wave is double. *Subject Headings:* **Advection, Upper air temperatures.**—*C.E.P.B.*

SOIL TEMPERATURE

2.10–107 551.525:551.311.12

Sharp, Robert P., **Thermal regimen of firn on Upper Seward glacier, Yukon Territory, Canada.** *Journal of Glaciology,* 1(9):476–487, March **1951.** 6 figs., 2 tables, 34 refs. English and German summaries, p. 476. **MH-BH**—Narrow holes were bored in the firn of the airstrip down to 204 ft. and thermohms inserted at depth intervals. Diurnal variation extended only to 4 inches. Rate of penetration of minimum 2 in./hr., amplitude decreased by 0.9°C. /inch. Curves from June 28 to July 7 show gradual elimination of winter chilled layer from 20 ft. downwards to 42–51 ft. Cooling was by radiation and evaporation, warming by insolation and melt-water. *Subject Headings:* **Firn, Earth temperatures, Glaciers, Yukon Territory.**—*C.E.P.B.*

2.10–108 551.525.4 551.586:631.4

Steubing, Lore, **Bodentemperaturen und ihr Einfluss auf Thymus Serpyllum an verschiedenen Standorten.** [Soil temperatures and their influence on mountain thyme in various situations.] *Angewandte Meteorologie,* 1(1):15–19, **1951.** 2 figs., 5 tables, 6 refs. **MH-BH**—Temperature was read at 7, 14, 21 h. at surface (bulb just covered) and depths of 2, 5, 10, 15 cm. in peat, sand and meadow soil settled by thyme. In insolation weather at 14 h.

peat was 27–32°C. above air temperature, sand 18–22°, meadow 12–16°; the peat surface reached temperatures up to 64.5°C. (148°F.). The root system was shallowest in the favorable meadow, deepest in sand. *Subject Headings:* **Earth temperatures, Plant ecology.**—*C.E.P.B.*

2.10–109 551.525.5:63

Hénin, S. and Robichet, O., **Observations sur le gel du sol et ses conséquences agronomiques.** [Observations on soil freezing and its agronomic consequences.] *France, Institut National de la Recherche Agronomique, Annales, Ser. A, Annales Agronomiques*, 1(6):732–747, Nov.–Dec. **1950.** 11 figs., 2 tables, 2 refs. **DWB**—The author discusses the mechanism of soil freezing and distinguishes two types of ice crystal formation: 1) lamellar crystals forming in a compact environment of fine structure, 2) needle shaped crystals in coarse environment. Variations in soil level as a result of soil movement due to freezing have been studied by the use of stakes planted in the soil at various depths. The effect of soil freezing upon plants by exposing their roots is discussed. *Subject Headings:* **Soil freezing, Ice crystal formation, Agronomy.**—*I.L.D.*

2.10–110 551.525.5

Sigafors, R. S. and Hopkins, D. M., **Frost-heaved tussocks in Massachusetts.** *American Journal of Science*, 249:312–317, April **1951.** 5 plates, 10 refs. **DWB**—The height of tussocks of some grasses and sedges in lowland areas of northeastern United States is increased by frost heaving processes similar to those that affect some tussocks in tundra regions of Alaska. *Subject Heading:* **Frost heaving.**—*Author's abstract.*

2.10–111 551.525.5

†Volokhonskiĭ, L. Sh., **Teoriia promerzaniia grunta.** [Theory of freezing of the ground.] *Leningrad, Glavnaia Geofizicheskaia Observatoriia, Trudy*, 19(81):41–65, **1950.** tables, 10 refs., numerous equations. **DLC**—A most intensely theoretical treatment of the problem of heat transfer and radiation in and above freezing ground, with an appendix giving tables and examples of calculation of intensity and depth of freezing under specified conditions. *Subject Headings:* **Heat transfer, Soil temperatures, Frozen soil.**—*M.R.*

ATMOSPHERIC PRESSURE AND WIND

PRESSURE

2.10–112 551.541:551.55

Matthews, L. S., **Pressure and wind oscillations at Khartoum.** *Weather*, 6(6):185, June **1951.** 2 tables. **DWB**—Sept. 30, 1950, 3–4½ h., a series of damped waves was recorded, period 15 minutes, initial amplitude 0.8 mb. and 12 m.p.h. Cause obscure but "pulses" of wind corresponded with winds at 500–1500 ft. *Subject Headings:* **Pressure oscillations, Turbulence, Khartoum, Egypt.**—*C.E.P.B.*

2.10–113 551.543:551.461.

Unoki, Sanae, **On the variation of sea level caused by the variation of atmospheric pressure (An investigation on meteorological tides in the neighboring seas of Japan—First paper.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(9):321–339, Sept. **1950.** 6 figs., 3 tables, 10 refs., 40 equations. In Japanese, English summary p. 338–339. **MH-BH**—Author calculates phase difference E between a simple harmonic pressure wave and corresponding change of sea level as: $\tan E = \frac{1}{4\pi g} \cdot \frac{TU^2}{h} \cdot \frac{(\lambda^2 + k^2)}{k}$ where T, U are period and velocity of surface pressure. This agrees with observation, confirming assumption that retardation is due to resistance to long sea wave. *Subject Headings:* **Storm tides, Pressure variations, Japan.**—*C.E.P.B.*

2.10–114 551.548.3:551.590.2

Pramanik, S. K., **The lunar atmospheric tide at Trivandrum and Agustia.** *Indian Journal of Meteorology and Geophysics*, 2(1):57–58, Jan. **1951.** 4 tables, 5 refs. **MH-BH**—Table

give the mean annual lunar atmospheric tide and three seasonal values at Trivandrum for various intervals from 1853 to 1864 and at Agustia, the probable errors of the results and the lunar tide at other places over the world. *Subject Headings:* **Atmospheric tides, Lunar influences, India.**—*I.L.D.*

WIND

2.10–115 551.551

Frankenberger, Ernst, **Über Austauschmessungen.** [On exchange measurements.] *Zeitschrift für Meteorologie*, 5(5–6):171–172, May–June **1951.** 2 figs., 3 refs. **MH-BH**—The potential temperature gradient calculated by theory is less than the observed gradient above 10 m. on a July day, while the wind profiles agree. This is due to convection. Author gives a sketch of the part played by turbulent and convective heat exchange at different heights and different wind velocities. *Subject Headings:* **Turbulent exchange, Austausch, Wind profiles.**—*C.E.P.B.*

2.10–116 551.551

Inoue, Eiichi, **On the structure of wind near the ground (II).** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(9):339–345, Sept. **1950.** 2 figs., 5 refs., 17 equations. In Japanese, English summary p. 345. **MH-BH**—Gustiness depends on range of observable eddies, limited upward by duration of observations, root-mean-squares of gust components being about proportional to cube root of time. This is confirmed up to 100–300 secs. The lower limit depends on sensitivity of instrument. *Subject Headings:* **Gustiness, Wind structure.**—*C.E.P.B.*

2.10–117 551.551

Raethjen, Paul, **Bemerkungen zum Tangentialdruck des Windes am Erdboden.** [Remarks on the tangential pressure of the wind on the earth's surface.] *Zeitschrift für Meteorologie*, 5(5–6):167–170, May–June **1951.** 4 refs., 19 equations. **MH-BH**—Author calculates empirically that tangential wind pressure over land is proportional to 1.5 power of wind velocity (as found by G. NEUMANN over sea), not to square. He considers that this agrees with wind tunnel experiments. *Subject Heading:* **Wind pressure.**—*C.E.P.B.*

2.10–118 551.555 551.589(497.1)

*Milosavljevic, Mark, **Fizičke osobine vetrova u Beogradu.** [Physical properties of winds at Belgrade.] Belgrade, **1950.** 67 p. 30 figs., 15 tables, 19 refs. French summary p. 65–67. **DWB**—The frequency of winds from various directions (1920–1945), of wind speeds and of extreme wind speeds, the mean temperature of winds from various quadrants; the variations of vapor pressure, of relative humidity and cloud amount (%) and, finally, variations in precipitation, rain, snow and fog with different wind directions are presented in detailed tables and in the form of wind roses, and are discussed analytically. This is a most elaborate treatment of average conditions and variability of weather conditions with different air flow—a contribution to "synoptic climatology." *Subject Headings:* **Synoptic climatology, Wind frequencies, Belgrade, Yugoslavia.**—*M.R.*

2.10–119 551.555.8

Zinkeiwicz, Włodzimierz, **Perturbacja w przezroczystosci atmosfery oraz opad pytueliczнego w Lubelszczyznie w kawietniu 1948 roku.** [Optical atmospheric turbidity and eolian dust falling in the Lublin Palatinate, April 1948.] *Annales Universitatis Mariae Curie-Skłodowska*, Lublin, 4B(4):47–60, **1949.** 2 figs., 2 tables, 11 refs. English summary p. 59–60. **DLC**—A cyclone appeared over Asia Minor on the synoptic charts of April 10, leading to the conclusion that the dust was brought into Poland by high southerly winds over the Ukraine and northeasterly winds over Poland. Questionnaires sent to professors in the Lublin region showed that dust fell in 27 of 36 localities (all except the north part), arriving in the east part on the 11th and in the west part on the 12th and covering 14,750 sq. km. area. Mainly from .005 to .01 mm. in diameter. *Subject Headings:* **Dust haze, Turbidity, Poland.**—*M.R.*

2.10–120 551.553.1

Kleinschmidt, Ernst, Sen., **Zum Tagesgang des Windes in Potsdam.** [On the diurnal variation of the wind in Potsdam.] *Zeitschrift für Meteorologie*, 5(5–6):163–167, May–June **1951.** 2 tables, 5 refs. **MH-BH**—Criticism and improvement of a method devised by F. MÖLLER (1940) for calculating the diurnal backing or veering of wind due to convection. *Subject Headings:* **Diurnal wind variations, Potsdam, Germany.**—*C.E.P.B.*

2.10–121 551.553.1

§Koch, Horst Günter, **Tagesperiodische Winde in Oberitalien.** [Daily periodic winds in Upper Italy.] *Zeitschrift für Meteorologie*, 4(10):299–313, Oct. **1950.** 14 figs., 7 tables, 12 refs. **MH-BH**—On cloudless days, with little general wind, local temperature differences between sea and land or mountain and plain cause local pressure differences up to 4 mb. with warm lows over southern slopes and high over Po plain. The resulting double circulation extends to a height of 2–4 km. Mountain and valley, mountain slope and land and sea winds are briefly described. On the northern Apennines a squally E wind often sets in suddenly at 17–19 h. It is illustrated by autographic records and a height-time diagram for Bologna based on radiosondes. *Subject Headings:* **Diurnal wind variations, Bologna, Italy.**—*C.E.P.B.*

2.10–122 551.553.11

*§Tyner, Ralph, **An investigation into the frequency of off-shore winds at Green Island, B. C. during the period September 1st, 1949 to March 31st, 1950.** *Canada, Meteorological Div., Circular* 1840, Tec. 79, Sept. 26, **1950.** 6 leaves. chart, map, 3 tables. **MH-BH**—A discussion of strong off-shore winds (squamishes) in inlets opening to W. or S. W. and bordered by high mountains. Depth of wind usually about 3000 ft. Observations with wind vane at Green Is. lighthouse are compared with gradient wind. N.E. winds include 47 percent of all observations. Typical synoptic charts shown. *Subject Headings:* **Off shore winds, Green Island, British Columbia.**—*C.E.P.B.*

2.10–123 551.556

Clark, D. D., **Streaks on natural water surfaces.** *Weather*, 6(6):187–188, June **1951.** 2 refs. **DWB**—Streaks across wind are attributed to abrupt transition from turbulent to laminar flow, causing zones of local accumulation. Streaks parallel to wind are attributed to deflection of clear water by patches of film into lanes by stronger turbulent wind. *Subject Headings:* **Wind effects, Water surfaces.**—*C.E.P.B.*

2.10–124 551.556

Tsubota, Hiroshi, **Relation between the inclination of a streamer and wind velocity.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(9):352–355, Sept. **1950.** 3 figs., tables, 2 refs., equations. In Japanese, English summary p. 355. **MH-BH**. Inclination of a cylindrical cloth streamer in a wind of given velocity was calculated, results shown by curve agree with observations. *Subject Headings:* **Wind pressure, Drags.**—*C.E.P.B.*

AQUEOUS VAPOR AND HYDROMETEOROLOGY

WATER VAPOR AND CLOUDS

2.10–125 551.573:551.577.11

†Kinzer, Gilbert D. and Gunn, Ross, **The evaporation, temperature and thermal relaxation-time of freely falling waterdrops.** *Journal of Meteorology*, 8(2):71–83, April **1951.** 10 figs., 2 tables, 14 refs., 29 equations. **MH-BH**—A detailed treatment of the theoretical and experimental problems of determining the evaporation from freely falling raindrops. History and methods are first discussed. Then the heat and vapor transfer theory, the equilibrium temperature of freely falling drops, time required to reach thermal equilibrium, rate of evaporation when motion is slow and entrainment important. Types of apparatus for measuring various factors are described and illustrated; results of measurements plotted and compared with theory. *Subject Heading:* **Evaporation of raindrops.**—*M.R.*

2.10–126 551.573

*Rosenan, N., **The measurement of evaporative power in Israel.** *Israel, Meteorological Service, Ser. A, Meteorological Notes,* No. 1, **1951.** 11 p. fig., 4 tables, 3 refs. **DWB**—Tabulates and discusses mean evaporation, day and night means and extremes for 1940–49, obtained by Piche evaporimeter in standard screens at a number of stations in Palestine and Transjordan. They show increased evaporation from the coast inland, with height, and from north to south in the Jordan rift. Evaporation is related to saturation deficiency and wind speed. *Subject Headings:* **Evaporation, Israel.**—*C.E.P.B.*

2.10–127 551.574.1

Best, A. C., **Drop-size distribution in cloud and fog.** *Royal Meteorological Society, Quarterly Journal,* 77(333):418–426, July **1951.** fig., 2 tables, 8 refs., 10 equations. **MH-BH**—Data on drop size distribution in cloud and fog are summarized and each group fitted logarithmically to expression $1-F=\exp.[-(x/a)^n]$ (cf. BEST's expression for raindrop sizes) where F is fraction of liquid water comprised in drops with diameter less than x; n is an index with an average value of 3.27. An appendix describes computation of average size of cloud crops. *Subject Headings:* **Cloud physics, Drop size distribution.**—*C.E.P.B.*

2.10–128 551.574.1:551.578.11

Ludlam, F. H., **The production of showers by the coalescence of cloud droplets.** *Royal Meteorological Society, Quarterly Journal,* 77(333):402–417, July **1951.** 10 figs., 20 refs., 19 equations. **MH-BH**—In a convective up-current into Cu. cloud several hundred droplets form per cc., of radius 7–20 μ. Drops exceeding 20 μ form on large hygroscopic nuclei such as are present in maritime air. Growth by coalescence of droplets of 20–40 μ and containing 6×10^{-10} g. NaCl is calculated, using efficiency of catch depending on radius and height. A critical condition for development of showers is a drop radius of at least 150 μ at top of a cloud of thickness 1.5–6 km., depending on updraft and temperature at cloud base. If base exceeds 8°C. showers may fall from clouds not reaching 0°C. If base is below 0°C. (equivalent on average to a sea temperature of 6°C.) drop breaking and thunder are unlikely. This is illustrated by a map of sferics plotted in N. Atlantic. *Subject Headings:* **Cloud physics, Rain structure, Raindrop formation.**—*C.E.P.B.*

2.10–129 551.574.1 551.508.765

Frith, Ronald, **The size of cloud particles in stratocumulus cloud.** *Royal Meteorological Society, Quarterly Journal,* 77(333):441–444, July **1951.** 3 figs., table, 4 refs. **MH-BH**—Diem's cloud droplet impactor was used to obtain the size distribution of droplets in thin St. Cu. clouds. Results after adjustment are plotted as number of particles/cc. against mass of water, but there is much scatter. Curves of size distribution show a main maximum varying from 6–24 μ and a slight secondary maximum at 2–3 μ. *Subject Headings:* **Cloud physics, Stratocumulus clouds, Cloud meters, Drop size distribution.**—*C.E.P.B.*

2.10–130 551.576:77

Deppermann, Charles E., **An improved mirror for photography of the whole sky.** *American Meteorological Society, Bulletin,* 30(8):282–285, Oct. **1949.** 2 figs., tables, 5 refs., 2 equations. **DWB**—The author has attempted to improve the wide-angle (180°) camera used by DR. GEORGII at Hamburg Observatory for photographing the whole sky. Theoretical solution and data given for construction of mirror that will reflect the whole visible sky uniformly into the camera. *Subject Headings:* **Whole sky photography, Cloud observation.**—*M.R.*

2.10–131 551.576:77

Great Britain. Meteorological Office, **Some cloud photographs of interest.** London, H. M. Stationery Office, **1942.** 11 p. 18 photos. At head of title: M.O.M. 419. **DWB**—Nine pictures of *altocumulus castellatus* are supplemented by remarks of C. K. M. DOUGLAS on the frequency and prognostic value of such clouds. Other remarkable pictures of fog along coastal areas, cumulonimbus and orographic clouds are supplemented by remarks. *Subject Heading:* **Cloud photographs.**—*M.R.*

2.10–132 551.576.1:7

Bonacina, L. C. W., **Turner as a weather painter. A centenary appreciation.** *Weather*, 6(7):200–203, July **1951.** 2 photos. **DWB**—Reference to TURNER's often hectic skies, and descriptions of some of his weather pictures. The photos show "The wreck" and "Snowstorm." *Subject Headings:* **Cloud structure, Art.**—*C.E.P.B.*

2.10–133 551.576.1:77

Hurst, G. W., **High-level cloud photographs.** *Meteorological Magazine*, London, 80(945): 89–91, March **1951.** 5 photos. **DLC**—These fine photos from aircraft at 25,000–40,000 ft. over S. England show: Cu. from above; clouds in unstable air; St.cu. and Ci.; A.cu. showing a "fault" due to a wind discontinuity; Ci. showing long rolls. Synoptic situations noted. *Subject Heading:* **Cloud photographs.**—*C.E.P.B.*

2.10–134 551.576.11:551.588.21

Clouds formed in lee waves. *Weather*, 6(5):136, May **1951.** 2 photos. **DWB**—Fine photos of lenticular clouds, Iceland and Aberdeen. *Subject Headings:* **Cloud structure, Lee waves.**—*C.E.P.B.*

2.10–135 551.576.11:551.555.3

Rossmann, Fritz, **Die Ausbildung der Föhnfischwolkenformen an oder über einem Gebirge.** [The formation of lenticular föhn clouds on or over a mountain.] *Zeitschrift für Meteorologie*, 5(5–6):160–163, May–June **1951.** 2 photos, 4 refs. **MH-BH**—The characteristic forms of cloud in valley föhn are attributed to moist labile descent of air inside drier stable stratified air masses. They form on the lee side or crest as banner clouds. The photos show the "föhn wall." *Subject Headings:* **Cloud formation, Föhn winds.**—*C.E.P.B.*

2.10–136 551.576.11

Vilkner, H., **Wolkenstrassen.** [Cloud lanes.] *Zeitschrift für Meteorologie*, 5(3):78–82, March **1951.** 8 figs., table, 5 refs. **MH-BH**—Discusses geometry of wind movements in a patterned cloud, combining individual wave trains with the motion of the whole. Various cases are discussed. Cloud lanes are generally limited to medium and high clouds. A scheme of classification is set out for cloud lanes and other patterned clouds. Conditions of formation are discussed—release of warmed surface air at intervals of 5–20 minutes, in columns 50–100 m. across, with wind increasing upwards leads to long streaks of cloud. Another cause, probably thermodynamic, causes a double rolling motion about twin axes along the line of the cloud on some occasions. *Subject Headings:* **Cloud lanes, Cloud classification.**—*C.E.P.B.*

2.10–137 551.576.12(09)

Nikitin, N. D., **Ocherk razvitiia klassifikatsii oblakov i oblachnykh sistem.** [Outline of the development of classification of clouds.] *Meteorologiia i Gidrologiia*, No. 3:19–30, **1947.** 2+tables, 48 refs. **DWB**—The paper presents an outline of the history of cloud classification from the 18th century to the present time. It contains the classifications by the commission for preparation of the International Cloud Atlas by L. BESSON, by T. BERGERON and a list of 77 Latin names of clouds with Russian equivalents for each. *Subject Headings:* **Cloud classification, History of meteorology.**—*C.K.*

2.10–138 551.576.31:551.553.11

Neumann, J., **Diurnal variation of low cloudiness in summer at two stations situated near coastlines of opposite curvature.** *Israel, Meteorological Service, Ser. A, Meteorological Notes*, No. 2, **1951.** 14 p. 6 figs., 4 tables, 12 refs. **DWB**—Near a concave coast, sea breezes are divergent and land breezes convergent; on an island the reverse holds. This is illustrated by a study of the winds at 05 and 14 hrs. in the eastern Mediterranean in summer. The effect is shown by the diurnal variation of cloud at Lydda Airport and Nicosia (Cyrus). At Lydda there is a double maximum at 05 and 08 hrs., the first due to land breeze convergence, the second to the oceanic morning maximum. At Nicosia the maximum is at 14 hrs. (sea breeze convergence). *Subject Headings:* **Land and sea breezes, Diurnal cloud variations, Israel, Mediterranean Region.**—*C.E.P.B.*

PRECIPITATION

2.10–139 551.577.2(82)

*Olascoaga, M. J., **Some aspects of Argentine rainfall.** *Tellus*, 2(4):312–318, Nov. 1950. 11 figs., 4 tables, 3 refs., append. **MH-BH**—A study to determine the percentage of days with rain which accounts for most of the rainfall in different climatic provinces of Argentina and the percentage of rainfall which results from rainstorms (when more than 5 stations in a zone record rainfall on a given day). Ten nearly uniform raingage stations in 9 provinces and 5 raingage stations in the far south were chosen for this study of a 5-year period, 1944–1948. Tables show: 1) mean seasonal and annual rainfall in each zone, 2) mean seasonal and annual number of days with rain for the same areas, 3) percentages of days with rain that account for 50% and 75% of the annual precipitation in each zone and 4) the percentages of rainstorms that account for 50% and 75% of the annual precipitation due to rainstorms in each zone. *Subject Headings:* **Precipitation distribution, Argentina.**—*M.L.R.*

2.10–140 551.577.3:551.501.9

*Linsley, Ray K., Jr. and Kohler, Max A., **Variations in storm rainfall over small areas.** *American Geophysical Union, Transactions*, 32(2):245–250, April 1951. 6 figs., 3 refs., 3 equations. **DWB**—Discusses results of 55 recording raingages approximately 2 miles apart over an area of 220 sq. miles near Wilmington, Ohio, in 1947 and 1948. Error of determination of average precipitation P over area A from N raingages over 220 sq. miles is given by $E = 0.186\ I^{0.47}\ N^{-0.6}$. Similar equations given for smaller areas. Error of a single gage representing a specified area is also discussed. *Subject Headings:* **Precipitation variations, Rainfall networks, Wilmington, Ohio.**—*C.E.P.B.*

2.10–141 551.577.32

Thraen, August, **Zur Darstellung der Niederschlags-Jahresperiode. Als Beispiele: 7 Regen-Kerntypen aus Europa (Normalzeit: 1856–1944).** [On the representation of the annual period of rainfall. As example: 7 characteristic rainfall types from Europe (*Normal period:* 1856–1944).] *Zeitschrift für Meteorologie*, 4(10):297–299, Oct. 1950. figs., 2 tables. **MH-BH**—Author sets out four ways of expressing annual variation of rainfall by months: amount in mm./day, Angot's coefficient, a local coefficient taking account of altitude of sun, and "tendency" (% probability that mean daily amount in the year will be exceeded). These are shown in monthly histograms for 7 stations. *Subject Headings:* **Precipitation variations, Europe.** *C.E.P.B.*

2.10–142 551.577.35

Steinhäusser, Hans, **Über Serien über- bzw. unterdurchschnittlicher Jahreshöhen des Niederschlages und Abflusses.** [On series of annual rainfalls and runoffs over or under the mean.] *Zeitschrift für Meteorologie*, 5(2):58–59, Feb. 1951. table, 2 refs., 2 equations. **MH-BH**—In last 20 years in S. Alps, years deficient in rain predominated. Sequences of rainfall at Klagenfurt 1813–1932 and flow of Drau 1896–1940 are compared with chance probabilities ($p = q = \frac{1}{2}$) and a tendency is found for occurrences of long runs (5–10 years) to exceed expectancy (possibly due to long periodicities). *Subject Headings:* **Precipitation variations, Runoff, Austrian Alps.**—*C.E.P.B.*

2.10–143 551.577.36

Hoffmeister, J., **Die Häufigkeit der Niederschläge nach Stufenwerten in Nordwestdeutschland.** [The frequency of precipitation by steps in north-west Germany.] *Zeitschrift für Meteorologie*, 5(5–6):178–183, May–June 1951. 2 figs., 2 tables, 2 refs. **MH-BH**—Tables give for Löningen, Hannover, Göttingen, Clausthal, all 1856–1935, numbers of 5-day periods in each month with rainfalls between different limits. These are discussed. *Subject Headings:* **Precipitation frequencies, Precipitation distribution, Germany.**—*C.E.P.B.*

2.10–144 551.577.37:625.1

Masatsuka, A., **On the land-slip at Gözu.** *Journal of Meteorological Research*, Tokyo, 2(10):301–309, Nov. 1950. 8 figs., 4 tables, 5 equations. In Japanese, English summary

p. (9). **MH-BH**—A landslip occurred in a railway tunnel on March 7, 1949 and subsequently spread under influence of heavy rain. Daily observations given March 15–May 31. *Subject Headings:* **Precipitation, Landslides.**—*C.E.P.B.*

2.10–145 551.577.37:551.577.6

Miller, Arthur Austin, **Cause and effect in a Welsh cloudburst.** *Weather*, 6(6):172–179, June **1951.** 2 figs., 2 tables. **DWB**—Account of a torrential storm with thunder and hail near Dolgelley, May 29, 1944 in unstable Tm air, just to leeward of mountain crests. Floods occurred at narrow exits from valleys causing much erosion and damage (velocity of water estimated as 10 ft./sec.). A stone delta 60×20 yards and 6 ft. thick was deposited by one small stream. *Subject Headings:* **Cloudbursts, Dolgelley, Wales.**—*C.E.P.B.*

2.10–146 551.557.37:551.551

Syono, Sigekata, **On the vertical rain.** *Tokyo, University, Geophysical Institute, Geophysical Notes*, 3(25), **1950.** 3 p. fig., table, 4 refs., 6 equations. Also in *Collected Meteorological Papers*, Tokyo, 2(2), Dec. **1950.** In English. **MH-BH**—Intensity of rain in air converging because of surface friction is proportional to vorticity of gradient wind (vortical rain). The equation expressing this includes a factor containing many unknown constants; this factor is determined empirically from intensity of rain 113 km. from center of a typhoon. The expression then gives values agreeing with intensity 113–800 km. from center, there is a discontinuity at about 700 km. *Subject Headings:* **Rainfall structure, Typhoon rainfall.**—*C.E.P.B.*

2.10–147 551.578.11

Miyake, Y. and Sugiura, Y., **The mechanism of dissolution of the atmospheric chloride into rain water.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):222–226, Dec. **1950.** 4 figs., 5 refs., 11 equations. **DWB**—Capture of salt particles by collision with falling raindrops results in progressive diminution of salt content of rain. This was calculated and agreed with observation. A relation was found between total precipitation P and chlorinity C roughly in the form CP=a constant which depends on local conditions. Radius of salt particles calculated as 0.8×10^{-4} cm. *Subject Heading:* **Rainwater analysis.**—*C.E.P.B.*

2.10–148 551.573.13:93

Wheeler, Raymond H., **The 18.3-year cycle in real estate in relation to rainfall.** *Journal of Human Ecology*, 1(5), **1951.** 9 p. 2 figs., 2 tables. **DWB**—The WENZLICK curve of real estate activity for the period 1795 to 1949 is shown in connection with dry and wet years, and it is concluded that peaks in the cycle of business activity correspond to wet years and the troughs to dry years. The author maintains that in wet years people are more aggressive and that a definite 18.3 year cycle in real estate sales is found to correspond to a combination of the 7, 18, 44 and 90 year cycles in rainfall. As a result of these cycles long range predictions of rainfall could give long range predictions of real estate activity. *Subject Headings:* **Rainfall cycles, Human ecology, Trade.**—*M.R.*

2.10–149 551.578.46:551.556

Hornstein, R. A., **Snow rollers.** *Weather*, 6(6):168–169, June **1951.** 2 photos, 5 refs. **DWB**—Cylindrical snow rollers are formed in soft snow just above 32°F. Photos in New Brunswick. *Subject Headings:* **Snow rollers, Wind effects.**

HYDROMETEOROLOGY

2.10–150 551.579.4:551.577.37(45)

De Marchi, Giulio, **Ripercussioni della regolazione del Lago Maggiore sulle piene del lago e su quelle del Ticino a Sesto Calende.** [Effects of the regulation of Lake Maggiore on floods on that lake and on Ticino at Seste Calende.] *Milan, Politecnico, Istituto di Idraulica e Construzioni Idrauliche, Memorie e Studi*, No. 86, **1950.** 84 p. 14 figs., 7 tables, refs., 11 equations. **DWB**—An elaborate analysis and presentation of data on floods or water-level variations at Lake Maggiore from the great flood of 1868 to 1942. *Subject Headings:* **Floods, Lake Maggiore, Lake Ticino.**—*M.R.*

2.10–151 551.579.5

Izmail'skiĭ, Aleksandr Alekseevich, **Izbrannye sochineniia.** [A. A. Izmail'skiĭ. Selected works.] T. A. Kovalia (*ed.*). Moscow, Gosizdat., **1949.** 335 p. 3 figs., graph. 60 tables, 32 refs. **DLC**—A collection of articles of historical interest discussing contemporary ideas, instruments, methods of observation, calculations, etc. on soil moisture in the steppe regions of the U.S.S.R. Pt. I, Chap. VI (p. 53–57) contains a discussion of the relation between precipitation, relief and soil moisture. In Pt. II there are a number of chapters (V, VI, VII, VIII, IX and X) dealing with soil moisture in the years 1887, 1888, 1889, 1890, 1891, 1892 and 1893. Each chapter contains notes and data on agricultural and meteorological conditions at Poltava and a summary of the 6 years work (p. 294–306). *Subject Headings:* **Soil moisture, A. A. Izmail'skiĭ, Poltava, Ukraine, U.S.S.R.**—*M.R.*

2.10–152 551.579.4

Lee, J. D., **Hydrology and its applications in engineering.** *Royal Meteorological Society, Canadian Branch,* [*Publications*], 1(6), June **1950.** 9 leaves, 7 figs. Mimeographed. **DWB**—Describes a hydrograph rating curve for determining runoff from gage level, plots of flood frequency, predicting flood level or maximum flood height in a given period, using frequency-duration curves of rainfall. Analysis of evapotranspiration and storage is discussed; potential evapotranspiration $=0.29(T-32)$, $T=$mean monthly temperature °F. Prediction of ice-jams is considered. Illustrations mostly from Moira River. *Subject Heading:* **Hydrometeorology.**—*C.E.P.B.*

2.10–153 551.579.5:63

Kutschera, L., **Planzensoziologische** (*sic*) **Beobachtungen im Lavanttal.** [Plantsociological observations in Lavant Valley.] *Wetter und Leben,* 3(3–4):57–61, March **1951.** **DWB**—In undisturbed, mixed deciduous forest on a slope in Lavamünd southern types of tree showed a favorable climate with plentiful water. Where snatch-crop agriculture lowered water level, karst or steppe vegetation developed (rain 830–850 mm. yr). Wetter meadows have not reached this stage. Between Thürn and Wolfsberg rainfall is below 800 mm. and region depends on plentiful ground water from slopes above. *Subject Headings:* **Soil moisture, Plant ecology.**—*C.E.P.B.*

2.10–154 551.579.5

Schiff, Leonard and Dreibelbis, F. R., **Preliminary studies on soil permeability and its application.** *American Geophysical Union, Transactions,* 30(5):759–766, Oct. **1949.** 4 figs., table. **MH-BH**—Describes experiments in passing water through soil cores. Approximate relations found to soil moisture content at time of sampling, but many cores are required to give mean values applicable to rainfall runoff estimates. *Subject Headings:* **Permeability, Soil moisture.**—*C.E.P.B.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

2.10–155 551.58(21,26)

†§Alisov, B. P., **Klimaticheskie oblasti zarubezhnykh stran.** [Climatic regions of foreign countries.] Moscow, Gosizdat., **1950.** 350 p. 99 figs., tables, biblio. p. 346–350. **DLC**—In 1947, Alisov published a small volume entitled "Klimaticheskie oblasti i raĭony SSSR," [Climatic areas and regions of the USSR], (*see item* No. 48–37 in Dec. 1948 *American Meteorological Society, Bulletin*). The basis of this work was the prevailing air mass movements and synoptic weather types for various natural regions of European and Asiatic U.S.S.R. In this, his latest work, Alisov has extended his method of climatic analysis to cover the whole earth, except for the U.S.S.R. The regions are based on broad climatic zones (Arctic, sub-Arctic, . . . Tropical, sub-tropical, monsoon, desert, etc.) subdivided according to air mass considerations. The text takes up each region in a general manner and includes examples of synoptic charts for typical or unusual situations. Brief illustrative tables and charts, showing mean seasonal weather conditions pertinent to the region are discussed. The first chapter

takes up the system of classification and the general climatic conditions over the earth. The next six chapters comprise the regions of each of the continents (Europe, Asia, Africa, Australia, South and North America, respectively). Chapters 8, 9 and 10, by S. L. Sorkina, cover the Atlantic, Indian and Pacific Ocean regions. The last two chapters discuss briefly the climate of the Arctic and the Antarctic regions from a synoptic point of view. The bibliography contains references to nearly 200 of the most important works on climates of different parts of the earth (about $\frac{1}{3}$ native and $\frac{2}{3}$ foreign works). This volume gives quite detailed information for some regions and shows more advanced techniques in presentation of charts and data than the author's earlier work on the U.S.S.R. and although many of the charts are taken from works of other authors, a great deal of care has been taken to select the situations which give the best picture of conditions in each area for the benefit of the student forecaster. *Subject Headings:* **Climatology, Synoptic climatology, Continents, Oceans.**—*M.R.*

2.10–156 551.582:016(85)

Indacochea G., Ángel J., **Bibliografía climatológica del Perú.** [Bibliography on the climatology of Peru.] *Instituto Geológico del Perú, Boletín* No. 4, **1946.** 81 p. **DWB**—Approximately 750 unannotated items arranged alphabetically by author. Citations to material on the usual phases of meteorology as well as to material on hydrology, economic geography, agricultural meteorology, glaciology, oceanography and other related subjects. The majority of the references are to literature written in the Spanish language; a few are to references in English or German. *Subject Headings:* **Climatology, Bibliographies, Peru.**—*M.L.R.*

2.10–157 551.582(491)

§Rodewald, Martin, **Klima und Wetter der Fischereigebiete Islands.** [Climate and weather in the fishing regions of Iceland.] *Beiträge zum Wettergeschehen in den nordeuropäischen Gewässern,* No. 2, **1951.** 95 p. 58 figs., tables, 16 refs. **DWB**—A comprehensive analysis of many phases of the meteorology of the Iceland area. The first section takes up the general climatic conditions and specific weather elements such as ocean currents, water temperatures, climatic variations and ice occurrence, fog and precipitation, pressure and wind, temperature of the air in all its aspects, cloudiness and hydrometeors, orographic effects in air flow and winds, large-scale weather processes and cyclone tracks, etc. with consolidated tables showing frequency of wind and weather elements in the area. The second section deals with synoptic weather situations—normal and abnormal, with many illustrative synoptic charts. Supplementary articles by the author deal with 1) ten cases (1898–1949) of shipwreck on the coast of Iceland and the attending synoptic weather situations, and 2) details of weather for the stormy season of 1949 in NW European Seas are given by areas and analyzed statistically in connection with previous winters. *Subject Headings:* **Climatology, Iceland.**—*M.R.*

2.10–158 551.582.2(62)

*Egypt. Meteorological Dept., **Climatological normals for Egypt.** Cairo, C. Tsoumas, **1950.** 157 p. chiefly tables. **DWB**—Monthly and annual normals of temperature, pressure, relative humidity, wind, rainfall, evaporation, duration of sunshine, earth, sea and river temperatures at a number of stations (6 to 80) in Egypt, Sudan and Sinai for varying periods between 1900 and 1945. *Subject Headings:* **Climatic data, Egypt.**—*M.R.*

2.10–159 551.582.3(26)

Jameson, H., **Recent British marine meteorological and surface current atlases.** *Marine Observer,* 21(152):115–119, April **1951.** **DWB**—Accounts of monthly meteorological charts, prepared by Marine Branch of the Meteorological Office, of Atlantic, W. and E. Pacific and Indian Oceans, Greenland and Barents Sea and current charts of various seas and oceans. Ends with a note of data available in the Branch. *Subject Headings:* **Oceans, Marine atlases.**—*C.E.P.B.*

CLIMATIC CHANGES

2.10–160 551.583(26)

Brooks, Charles E. P., **Oceans through the ages.** *Marine Observer,* 21(152):103–110, April **1951.** 2 figs., tables. **DWB**—Brief description of origin and history of the oceans,

ocean currents and weather of warm periods and of Quaternary and Permo-Carboniferous ice ages. Ends with an account of ocean changes in Post-glacial. *Subject Headings:* **Climatic changes, Oceans.**—*C.E.P.B.*

2.10–161 551.583:551.311.12

Gage, Maxwell, **The dwindling glaciers of the upper Rakaia Valley, Canterbury, New Zealand.** *Journal of Glaciology*, 1(9):504–507, March **1951.** fig., 3 photos. English and German summaries p. 504. **MH-BH**—The chief glaciers on the eastern slope have receded considerably but irregularly since the 1860's and wasted down. The steep gradients on the western side cause the Franz Josef glacier to follow climatic oscillations more rapidly. *Subject Headings:* **Climatic variations, Glaciers, New Zealand.**—*C.E.P.B.*

2.10–162 551.583:93

Wheeler, Raymond H., **Today an old world is dying and a new one is taking its place.** *Journal of Human Ecology*, 1(2), **1951.** 17 p. **DWB**—History and economics reduced to a 500 year cycle, with minor cycles of 1000 and 100 years to complicate the picture. A long descriptive account of past events in the history of civilization and a prediction of changes in the next 500 years, based on climatic cycles!! *Subject Headings:* **Climatic cycles, Human ecology.**—*M.R.*

2.10–163 551.583.7

Viete, Günter, **Zum Klima der Vorzeit.** [On the climate of the past.] *Zeitschrift für Meteorologie*, 5(4):102–110, April **1951.** numerous refs. **MH-BH**—An account of the geological reunion at Cologne Jan. 6–7, 1951—the difficulties of a borderline subject can only be met by concerted effort. Deals first with different types of evidence, especially lithological. Deep ocean cores give dated changes agreeing well with MILANKOVICH's radiation curve. H. FLOHN discussed the possibility of applying recent studies of atmospheric circulation to paleometeorology. The onset of glaciation may be explained by a predominantly meridional circulation, interglacials by zonal circulation; this is elaborated. The Permian ice age is discussed but no solution is entirely satisfactory. Repeated oscillations in the Tertiary climate of Europe are summarized. *Subject Headings:* **Paleoclimatology, Glacial periods.**—*C.E.P.B.*

MICROCLIMATOLOGY

2.10–164 551.584(47)

Stepanova, N. A., **Mikroklimaticheskoe issledovanie doliny reki Dona.** [Microclimatological investigation of the valley of the River Don.] *Trudy po Sel'skokhoziaĭstvennoĭ Meteorologii*, Leningrad, 21:214–222, **1938.** 4 figs., 8 tables. Reprint available. **MH-BH**—Hourly temperatures and humidities and three observations daily of wind velocity, at a site on the flood plain and one on a steep cliff (height about 85 m.). *Subject Headings:* **Microclimatology, Don River Basin, U.S.S.R.**—*C.E.P.B.*

2.10–165 551.584.2

Knoch, Karl, **Über das Wesen einer Landesklimaaufnahme.** [On the plan of a national climatic survey.] *Zeitschrift für Meteorologie*, 5(5–6):173–177, May–June **1951.** 8 refs. **MH-BH**—Proposes a series of large scale (?1:25,000) charts of climatic favorability, constructed by field workers inspecting, questioning and carrying portable instruments by car or bicycle. Departures from the normal climate of the region would be classed as exceptionally favorable, favorable, etc., noting specially frost hollows, windy sites, flood risk, etc. The uses of such maps and stages of development are set out. *Subject Headings:* **Local climate, Climatic surveys.**—*C.E.P.B.*

2.10–166 551.584.43:63

Lessmann, H., **Temperaturverhältnisse in Häufelreihen.** [Temperature conditions in "hilled up" rows.] *Baden, Landeswetterdienst, Jahresbericht mit Abhandlungen*, **1950.** p. 5–45. 9 figs., table. **DWB**—The experimental procedure for studying the temperature characteristics of "hilled up" potato beds is presented and the daily temperature character-

istics in relation to cloudiness and rain, during the growing season, are discussed. Soil temperature was measured in north to south directed walls; but this improvement was cancelled by cloudy and rainy conditions. West directed rows have no advantages over flat ground. Phenological observations on early potatoes lead to the conclusion that an improvement during spring in the surface climate of NS walls is important only as long as heat factor is a minimum and the water factor is at an optimum. *Subject Headings:* **Microclimatology, Agricultural climatology, Potatoes.**—*I.L.D.*

BIOCLIMATOLOGY—APPLIED CLIMATOLOGY

2.10–167 551.586:612:551.584

Bohnenkamp, H., **Die Bedeutung des Mikroklimas für die Betrachtung der Wetterein-flüsse auf den Menschen.** [The importance of microclimate for the consideration of the influence of weather on men.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 5:76–77, **1951. MH-BH**—Microclimate is often more important than passage of fronts or general weather type. Author distinguishes between effects on vegetative nervous system, on whole body and on skin. *Subject Headings:* **Microclimatology, Medical meteorology, Nervous system.**—*C.E.P.B.*

2.10–168 551.586:61:06

Lossnitzer, H., **Einführung zur Generalaussprache. [1. Tagung der Freiburger Arbeitsgemeinschaft für bioklimatische Forschung vom 24–26 März 1950.]** [Introduction to the general discussion. (First meeting of the Freiburger working party for bioclimatic investigation, 24–26 March, 1950.)] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 5:73–76, **1951.** Stühmer, A., **Schlusswort zur Gesamttagung.** [Final word on the whole conference.] *Ibid.*, 91–93. **MH-BH**—Lossnitzer discussed various points raised in the conference and the practical results. Stühmer referred to the approach between clinicians and meteorologists and the help it will be in diagnosis. *Subject Headings:* **Medical climatology, Conferences.**—*C.E.P.B.*

2.10–169 551.586:536.53

Bolz, H. M., **Bioklimatologische Hauttemperaturstudien am Ostseestrand.** [Bioclimatic studies of skin temperature on the Baltic shore.] *Angewandte Meteorologie*, 1(1):28–31, **1951.** 3 figs., 8 refs., 2 equations. **MH-BH**—Describes improvements in method of measuring skin surface temperature by infrared radiation from skin on a thermopile. Examples of its use are skin temperature in sun following shade, and in sun and shade after a sea bath. *Subject Headings:* **Medical meteorology, Skin temperature.**—*C.E.P.B.*

2.10–170 551.586:546.296

Curry, Manfred, **Klimaunterschiede und wetterbedingte Reaktionstypen.** [Climatic differences and reaction types due to weather.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 5:39–53, **1951.** figs. and photos. **MH-BH**—The oxidation factor in the air (Aran) is not the same as artificial ozone. The feeling of stuffiness in a closed room or below an inversion in valley or town is due to lack of Aran. There are two human types: "W," sensitive to warm air and lack of Aran, subject to inflammatory diseases and "K," sensitive to cold air, subject to spasmodic diseases. The mixed "G" type is sensitive to both. Illness begins when the tolerance limit is exceeded. Places with different Aran concentration suit different types. Large changes are worst, cf. Chicago. There follow descriptions and photos of "W" and "K" type subjects. *Subject Headings:* **Medical meteorology, Aran.**—*C.E.P.B.*

2.10–171 551.586:546.296

Hoehne, K., **Konstitutions- und Reaktionstypen in der Bioklimatik.** [Constitution and reaction types in bioclimatology.] *Annalen der Meteorologie, Medizin-meteorologische Hefte* No. 5:66–71, **1951.** 4 figs., 14 refs. **MH-BH**—Investigates reaction of leptosomes (slender)

nd pyknics (stout) to hot climates. Natives of hot, humid regions are mostly stout; of hot, lry regions, slender, but stout types in the Afrika Corps lasted longest. The relation of these KRETSCHMER types to CURRY's Aran-susceptible types is briefly discussed. *Subject Headings:* **Bioclimatology, Aran.**—*C.E.P.B.*

2.10–172 551.586:612:551.524

Brazol, Demetrio, **La temperatura biólogica óptima.** [The optimum biological temperature.] *Meteoros*, Buenos Aires, 1(1):99–106, Jan. **1951.** tables, 7 refs. **DWB**—A comparison of values for the ideal comfort temperature given by BRAZOL, KNOCHE, BERGEIRO, MORIZE, BRUNT, HILL, BESSON, MISSENARD, BREZINA & SCHMIDT, and KALITIN reveals the universal character of the climatic optimum, which is analytically expressed by an air enthalpy of 9.2 k cal./kg., corresponding to a wet bulb temperature of 13.8°C. or an equivalent temperature of 37.5°C. *Subject Headings:* **Bioclimatology, Air temperatures, Comfort zones.**—*R.S.Q.*

2.10–173 551.586:612

Mörikofer, Walter, **Zur Problematik der Wetterfühligkeit.** [On the problem of weather sensitiveness.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 5:18–20, **1951. MH-BH**—A summary of the present position. Deals first with the criteria of meteoropathology—human reactions to weather, active weather situations, peculiarities of weather sensitiveness. Pt. II discusses hypotheses—effect of composition or ionization of the air, rapid pressure changes, and changes of potential gradient. *Subject Headings:* **Medical meteorology, Weather sensitivity.**—*C.E.P.B.*

2.10–174 551.586:612

Spangenberg, Wolf W., **Atmung bei Schwüle.** [Breathing in sultriness.] *Angewandte Meteorologie*, 1(1):24–28, **1951.** 4 figs., 7 refs. **MH-BH**—Author tested belief that sultry weather causes difficulty in breathing by measuring amount of air inhaled and exhaled in deep breaths on 150 sultry days compared with 800 nonsultry. In 67% of subjects volume decreased, in 30% it increased, in 3% no change. Some not very definite relations were found to age and to asthmatic condition. *Subject Headings:* **Medical meteorology, Sultriness, Physiology.**—*C.E.P.B.*

2.10–175 551.586:612.014.43

Buettner, Konrad, **Effects of extreme heat on man; protection of man against conflagration heat.** *American Medical Association, Journal*, 144:732–738, Oct. 28, **1950.** 4 figs., 12 refs. Reprint available. **MH-BH**—Discussion of effects of extreme heat due to conflagrations on man by conduction and convection of hot air, contact with hot objects, radiant heat and inhaling hot air. Defines "escape time" when a man is still capable of action (from 200 min. at 50°C. to 3 min., at 250°C.), "pre-pain time," and defense against heat. Author's aluminum suit favored. *Subject Headings:* **Heat effects on man, Heat protection.**—*C.E.P.B.*

2.10–176 551.586:615.8

Mörikofer, Walter, **Wiesen im Landwassertal als Klimakurort.** [Wiesen in Landwassertal as a health resort.] *Schweizerische Gesellschaft für Balneologie und Klimatologie, Annalen*, No. 40:61–79, **1950.** 3 figs., 4 tables, 10 refs. **DWB**—Data are given on the duration of sunshine by months, wind velocity and cooling off magnitudes and relative humidity at Wiesen in Landwassertal. The particular suitability of this locality as a climatic health resort is discussed. *Subject Headings:* **Climatotherapy, Mountain resorts, Wiesen, Switzerland.**—*I.L.D.*

2.10–177 551.586:636

Ragsdale, A. E.; Brody, Samuel; Thompson, H. J. and Worstell, D. M., **Environmental physiology; with special reference to domestic animals. II. Influence of temperature 50° to 105°F., on milk production and feed consumption in dairy cattle.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 425, Nov. **1948.** 27 p. 12 figs., 8 tables, 11 refs. **MH-BH**—Lactating Jersey and Holstein dairy cows were exposed in a psychrometric room to ambient temperatures which were increased systematically

by 5°F. and 10°F. intervals from 50° to 105°F. at a constant relative humidity of about 70 percent. The control animals were exposed to a constant temperature (50 to 60°F.), humidity, etc. for 5 months and the experimental group was subjected to the high temperature long enough to become acclimatized. The data are presented in tabular and graphical form. Increasing ambient temperature depressed milk production, feed consumption and body weight and increased the milk fat percentage in most of the cows. The decline in milk production and feed consumption was steeper for the Holstein cows. The critical high temperatures at which the depressing effect became evident were between 75° and 80°F. for Holsteins and between 80° to 85°F. for Jerseys. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–178 551.586:636

Brody, Samuel; Burge, Gloria; Blincoe, Clifton and others, **Environmental physiology; with special reference to domestic animals. III. Influence of ambient temperature, 50° to 100°F., on the blood composition of Jersey and Holstein cows.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 433, March **1949.** 37 p. 5 figs., 26 tables, 15 refs., biblio. p. 26–30. **MH-BH**—Lactating Jersey and Holstein cows and nonlactating, nongestating Holstein cows were subjected in a psychrometric room to ambient temperatures which ranged from 50°F. to 100°F. with constant relative humidity. The effect of increasing temperature upon blood constituents is as follows: blood serum calcium was unchanged; CO_2 capacity of blood plasma declined beginning with 85°F.; catalase tends to decline with rise in ambient temperature; blood cholesterol declined with advancing stage of lactation, but the decline is steeper as the ambient temperature rises; blood creatinine increased with rising ambient temperature and the increase was greater in Holstein than in Jerseys; fatty aids and glucose diminished at higher temperatures; average counts of blood cells, the blood cell volume and hemoglobin level were influenced by high temperature; blood magnesium was unaffected by high ambient temperature; non protein nitrogen decreased significantly at high ambient temperature, inorganic phosphorus increased above 85°F. and blood plasma protein level remained unchanged. The data are presented tabularly and graphically and are carefully analyzed. A bibliography is given. *Subject Headings:* **Animal climatology, Dairying.** —*I.L.D.*

2.10–179 551.586:636

Kibler, H. H.; Brody, Samuel and Worstell, D. M., **Environmental physiology; with special reference to domestic animals. IV. Influence of temperature, 50° to 105°F., on heat production and cardiorespiratory activities in dairy cattle.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 435, March **1949.** 32 p. 15 figs., 6 tables, 15 refs., append. **MH-BH**—Lactating and nonlactating Jersey and Holstein cows subjected over a period of five months in a psychrometric chamber to temperatures which increased gradually from 50°F. to 105°F. with a constant relative humidity of about 50 percent. The effect of ambient temperature upon respiratory exchange, respiration rate, pulse rate, tidal air and pulmonary ventilation were studied. A specially designed open circuit apparatus for measuring heat production from oxygen consumption is described and is illustrated with photographs and with a diagram of its construction. Extensive data are presented tabularly and graphically. Respiration increased from 300 to 500 percent, and rectal temperature rose from 101°F. to 108°F. The pulse rate declined at the 95°F. level; in Jerseys it continued to fall above 95°F. but rose in Holsteins. Heat production declines. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–180 551.586:636

Thompson, H. J.; Worstell, D. M. and Brody, Samuel, **Environmental physiology; with special reference to domestic animals. V. Influence of temperature, 50° to 105°F. on water consumption in dairy cattle.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 436, March **1949.** 18 p. 6 figs., 3 tables, 15 refs. **MH-BH**—The role of water in the body economy of mammals, particularly in the regulation of body temperature, and some of the literature on the relationship of water to milk production in cattle are discussed. Dry and lactating Jersey and Holstein cows, both acclimatized and unacclimatized to high ambient temperatures, were subjected in a psychrometric room to

ambient temperatures that range from 50°F. to 105°F. with 50% relative humidity. The effect of high ambient temperature upon water consumption and the ratios of water consumption to milk production feed consumption, body weight and to heat production were studied. Increased water consumption was accompanied by a lower rise in rectal temperature, reduced depression of milk production and feed-consumption and an increase of urine output having a lower specific gravity. Individual differences among animals in water consumption at high ambient temperatures were found to be considerable. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–181 551.586:636

Ragsdale, A. C.; Worstell, D. M.; Thompson, H. J. and Brody, Samuel, **Environmental physiology; with special reference to domestic animals. VI. Influence of temperature, 50° to 0°F. and 50° to 95°F., on milk production, feed and water consumption and body weight in Jersey and Holstein cows.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 449, Sept. **1949.** 23 p. 8 figs., 8 tables, 6 refs., append. **MH-BH**—The authors investigated the effect of ambient temperature, which was gradually decreased from 50° to 0°F. and gradually increased from 50°F. to 95°F., upon the milk production, feed and water consumption and body weight of acclimatized and unacclimatized Jersey and Holstein cows. Lowering of temperature increased feed consumption and butterfat production but reduced the milk output; rising temperature lowered milk production, feed consumption and body weight. Water consumption paralleled feed consumption but tended to increase with increasing temperature above 80°F. Individuals showed considerable variability in water consumption. The sudden lowering of temperature affected unacclimatized animals more than acclimatized ones. The optimal temperature for milk production was about 50°F. and the critical one about 80°F. No critical low temperature was noted. Rising temperatures are more injurious to Holsteins than to Jerseys. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–182 551.586:636

Kibler, H. H. and Brody, Samuel, **Environmental physiology; with special reference to domestic animals. VII. Influence of temperature, 50° to 5°F. and 50° to 95°F., on heat production and cardiorespiratory activities of dairy cattle.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 450, Oct. **1949.** 28 p. 8 figs., 11 tables, 12 refs., append. **MH-BH**—Lactating and nonlactating Jersey and Holstein cows were subjected in air conditioned chambers to atmospheric temperatures, which decreased rapidly from 50°F. to 5°F and increased to 95°F., and the effects upon rectal temperature, pulse rate, respiration rate, heat production (computed from O_2 consumption and CO_2 production), methane production and pulmonary ventilation rate were measured. Decreasing atmospheric temperature produced no change in rectal temperature, increased heat production by 35 percent in lactating Holstein cows and by 30 percent in lactating Jersey cows, diminished respiration rate to minimal values of 10 to 15 per minute at 5°F. and increased the pulse rate by about eight percent. Increasing atmospheric temperature raised rectal temperature at environmental temperatures above 70°F., diminished heat production by 20 to 30 percent above 70° to 80°F., increased respiration rate to 100 at 95°F. and increased pulse rate. The thermoneutrality zone was found to be between 40° to 60°F. Acclimatization lasting several weeks was produced by rapid temperature changes. The data are presented tabularly and graphically and are thoroughly analyzed. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–183 551.586:636

Thompson, H. J.; McCroskey, R. M. and Brody, Samuel, **Environmental physiology; with special reference to domestic animals. VIII. Influence of ambient temperature, 0° to 105°F, on insensible weight loss and moisture vaporization in Holstein and Jersey cattle.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 451, Oct. **1949.** 19 p. 5 figs., 4 tables, 5 refs. **MH-BH**—An ordinary livestock balance provided with electronic timing devices and transformed into a precision balance indicating by 18 gm. per 1500 lbs. A description of the balance and a diagram of instrumentation for determining the balance point are presented; the principles of electronic operation, their applications to balanc-

ing and possible sources of error in operation of the scale are discussed. Insensible loss $= H_2O + [(CO_2+CH_4) - O_2]$ and moisture vaporization, $H_2O =$ insensible loss $- [(CO_2+CH_4) - O_2]$. While ambient temperature was increased from 0° to 105°F. the relative humidity remained constant so that vapor pressure also increased. Extensive data on insensible and evaporative moisture loss from Jersey and Holstein cows are presented tabularly and graphically. Per sq. m. of surface area insensible loss increases from 48 gm./hr. at 0°F. to 250 gm./hr. at 100°F. and evaporative moisture loss rises from 25 gm./hr. at 0°F. to 250 gm./hr. at 100°F. At 0°F. about 8 percent of heat produced in the cows was dissipated by evaporation; at 102°F. all the heat was dissipated in this manner. The evaporative heat dissipation of man and cows is compared. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

2.10–184 551.586:636

Ragsdale, A. C.; Thompson, H. J.; Worstell, D. M. and Brody, Samuel, **Environmental physiology; with special reference to domestic animals. IX. Milk production and feed and water consumption responses of Brahman, Jersey, and Holstein cows to changes in temperature, 50° to 8°F.** *Missouri, University, College of Agriculture, Agricultural Experiment Station, Research Bulletin* 460, Sept. **1950.** 28 p. 12 figs., 8 tables, 12 refs., append. **MH-BH**—The effect of rising temperatures 50°F. to 105°F. and of declining temperatures 50°F. to 8°F. upon the milk production, butter fat percentage, feed and water consumption and body weight of Jerseys, Holsteins and Texas bred Brahman cattle were studied over a five month period in a psychrometric room. In European breeds optimal milk production was around 50°F.; milk yield declined about 70°F. and below 40°F. In Holsteins the decline with rising temperatures is earlier than in Jerseys: Holsteins were influenced little by low temperatures. The milk output of Brahman began to decline between 90° and 95°F. Butterfat percentage declined with rising temperatures above 80°F. and increased below 40° F. Feed consumption behaved like milk yield above 70°F. and 95°F.; it continued to increase, however, even below 40°F. European cows lost weight at higher temperature; Brahmans maintained a constant weight. With declining temperatures all animals gained weight. Extensive data are presented tabularly and graphically. *Subject Headings:* **Animal climatology, Dairying.**—*I.L.D.*

MISCELLANEOUS APPLICATIONS

OPTICAL PHENOMENA

2.10–185 551.591.1

Foitzik, Leonhard, **Zur meteorologischen Optik von Dunst und Nebel. Teil I.** [On the meteorological optics of haze and fog. Pt. I.] *Zeitschrift für Meteorologie*, 4(10):289–297, Oct. **1950.** 8 figs., tables, 10 equations. **MH-BH**—Loss of light passing through water drops is expressed in two equations, for constant drop radius and constant wave length, after Stratton and Houghton. An expression for opaque particles is given by Götz. Visibility and extinction are plotted in terms of radius, refractive index and wave-length; a sharp minimum extinction occurs between 0.7 and 1.5μ in theory and observation. According to author's abstract, Pt. II will show that natural haze and mist can be regarded as mixtures of water drops with radii distributed according to Gauss' law of errors, functions are developed applicable to average and extreme distributions, and the values of the constants are tabulated. *Subject Headings:* **Visibility, Haze, Extinction coefficient.**—*C.E.P.B.*

2.10–186 551.593.1

Fultz, Dave, **An unusual optical double-refraction at high levels in the tropics.** *American Meteorological Society, Bulletin*, 32(3):102, March **1951. MH-BH**—Conditions during a pilot balloon run at San Juan, Puerto Rico, on Sept. 2, 1943 are described in connection with the sudden splitting of the image of the balloon (in the theodolite) into two bubbles, on 3 separate occasions between the 62nd and 71st minute of observation. This corresponded to a height of 17.7 to 20 km., and was near or a little above the tropopause and also a milky white layer. *Subject Headings:* **Refraction phenomena, Pilot balloon observation, San Juan, Puerto Rico.**—*M.R.*

2.10–187 551.593.5

Paton, James, **Light and colour in the sky and landscape.** *Weather*, 6(7):195–199, July **1951.** 2 figs. **DWB**—Popular account of absorption and reflection by colored objects, scattering of light in air and sunset phenomena. *Subject Heading:* **Absorption.**—*C.E.P.B.*

2.10–188 551.593.54

Dietze, Gerhard, **Die anormale Trübung der Atmosphäre September/October 1950.** [The abnormal turbidity of the atmosphere Sept./Oct. 1950.] *Zeitschrift für Meteorologie*, 5(3):86–87, March **1951.** 2 tables. **MH-BH**—Observations at Gotha showed great decrease of direct solar radiation. On Sept. 27 it was only a quarter of normal. Sept. 29–Oct. 2 cloudy, Oct. 3 normal, 4–6 renewed less extreme turbidity. Spectral maximum shifted towards red. On Oct. 4–29, polarization of red light, normally equal to blue, exceeded it by 152–25 per mille. Smoke particles were of about the dimensions of light waves. *Subject Headings:* **Turbidity, Polarization, Smoke pall—Sept. 1950.**—*C.E.P.B.*

2.10–189 551.593.54

Gelbke, W., **Bemerkungen zum Phänomen der blauen Sonne.** [Remarks on the phenomenon of the blue sun.] *Zeitschrift für Meteorologie*, 5(3):82–84, March **1951.** color photo, 9 refs. Jenne, W., **Weitere Beiträge zur Beobachtung und Erklärung des Phänomens "Blaue Sonne."** [Further contributions to the observation and explanation of the phenomenon "blue sun."] *Ibid.*, p. 84–86. **MH-BH**—Gelbke describes the color changes of the sun at Greifswald on Sept. 27, 1950, noting that sun's edge and sunspots were not at all blurred. Color photo shows that blue was real and not subjective. Earlier blue or green suns and moons are listed. Jenne discusses newspaper reports of origin and track of smoke cloud from Edmonton to Europe and its height. The blue color is attributed to particles of uniform size in an upper smoke layer in the stratosphere at 13 km. *Subject Headings:* **Blue sun, Smoke pall—Sept. 1950.**—*C.E.P.B.*

2.10–190 551.593.54

Wellmann, P., **Die Blaufärbung der Sonne am 27. September 1950.** [The blue color of the sun on Sept. 27, 1950.] *Zeitschrift für Astrophysik*, 28(3):310–314, **1951.** 2 figs., 2 tables, equations. **MH-BH**—Solar spectra were compared with the normal spectrum over 3800–4700 μ. The extinction coefficient due to the haze layer, shown by the differences, was directly proportional to the wave length. The radius of the particles was calculated as 200–530 μ. Blue coloring can only occur when the particles are all nearly the same size; their number is estimated as $2\text{–}5\times10^4$/cc. *Subject Headings:* **Blue sun, Smoke pall—Sept. 1950.**—*C.E.P.B.*

ELECTRICAL PHENOMENA

2.10–191 551.594.12

Misaki, M., **A method of measuring the ion spectrum.** *Papers in Meteorology and Geophysics*, Tokyo, 1(2–4):313–318, Dec. **1950.** 6 figs., 3 refs., 5 equations. **DWB**—In this method Nolan's divided condenser is used and by varying the potential applied to the outer cylinder and the capacity of the second condenser the spectrum of ion mobility can be obtained as a first derivative, to any degree of fineness. *Subject Heading:* **Electrical phenomena.**—*C.E.P.B.*

2.10–192 551.594.13

Agarwala, K. S., **The mobility of the small ions of the atmosphere at Poona.** *Indian Journal of Meteorology and Geophysics*, 2(1):63–65, Jan. **1951.** 2 figs., table, 6 refs. **MH-BH**—Mobility of the small ions of the atmosphere at Poona, as derived from simultaneous measurements of the conductivity and ion-content of the air, is discussed. Data are given graphically and tabularly. Mobility values were generally high during summer and monsoon season and generally low during the post monsoon and winter season. *Subject Headings:* **Ion mobility, Poona, India.**—*I.L.D.*

2.10–193 551.594.13

Israël, Hans, **Luftelektrische Tagesgänge und Luftkörper. (Studien über das atmosphärische Potentialgefälle III.)** [Diurnal variations of atmospheric electricity and air masses. (Studies on the atmospheric potential gradient III.)] *Journal of Atmospheric and Terrestrial Physics*, 1(1):26–31, **1950.** 3 figs. table, 11 refs. **MH-BH**—The diurnal variations of "columnar resistance" of a column of 1 cm.² air from ground to conducting layer for 11 places show unexplained phase differences. The effect of air mass was examined using data for Wahnsdorf. In summer diurnal variation (minimum about 8 h., maximum afternoon) in P, M, C, and T air differs little, but in winter they gave distinct types of variation. *Subject Heading:* **Atmospheric electricity.**—*C.E.P.B.*

2.10–194 551.594.18:551.524.7

Duperier, A., **Temperature of the upper atmosphere and meson production.** *Nature*, London, 167(4243):312–313, Feb. 24, **1951.** 4 refs., equation. **DWB**—Meson intensity at sea level is correlated with observed mean temperature between 50 and 200 mb. levels. *Subject Headings:* **Upper air temperatures, Stratosphere, Meson intensity.**

2.10–195 551.594.221

Mühleisen, R., **Blitzentladungen von Gewitterwolken nach oben.** [Upward lightning discharges from thunder clouds.] *Naturwissenschaften*, 38(6):140, March **1951.** fig., 7 refs. **MH-BH**—On July 1, 1950 many beautiful lightning flashes, branching upwards in clear sky from the upper surface of a frontal thunder cloud at 5 km., were seen. Sketch given. *Subject Heading:* **Lightning.**—*C.E.P.B.*

2.10–196 551.594.222

Gäbler, Horst, **St.-Elmsfeuer-Beobachtung.** [Observation of St. Elmo's fire.] *Zeitschrift für Meteorologie*, 5(4):124, April **1951.** **MH-BH**—On March 20, 1951 on Fichtelberg, St. Elmo's fire streamers 6–7 cm. long were seen during a snow squall, axis perpendicular to equipotential surface. *Subject Headings:* **St. Elmo's fire, Fichtelberg, Germany.**—*C.E.P.B.*

2.10–197 551.594.25:551.594.6

Duncan, P. F., **Precipitation static.** *Institute of Navigation, Journal*, London, 2(1):53–56, Jan. **1949.** **DWB**—Dust, ice, snow or rain, encountered by an airplane in flight, may build up static charges of as high as 400,000 volts. Sand, dust and smoke are the worst, ice crystals next and raindrops least likely to produce static. Methods of reducing danger from brush discharges discussed. *Subject Headings:* **Sferics, Precipitation static.**—*M.R.*

EARTHQUAKES

2.10–198 550.34

Homma, S. and Nagahasi, F., **On the migration of the centre of seismic activity in Japan.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(3):100–104, March **1950.** 5 figs., ref., equation. In Japanese, English summary p. 103–104. **DWB**—Epicenters of 118 disastrous earthquakes were defined by angular values from a center in Manchuria (i.e., along an arc traversing the Japanese archipelago). These showed a periodicity of about 66 years. *Subject Headings:* **Seismology, Japan.**—*C.E.P.B.*

2.10–199 550.34

Mukherjee, S. M., **Remarks on two Hindukush earthquake shocks.** *Indian Journal of Meteorology and Geophysics*, 1(4):297–302, Oct. **1950.** 2 figs., 19 refs. **DWB**—*Subject Headings:* **Seismology, Hindukush earthquake, India.**

2.10–200 550.342:62

†Leet, Lewis Don, **Earth waves.** Cambridge, Mass., Harvard University Press, **1950.** Price $3.00. 122 p. 58 figs., 10 tables, refs., 43 equations. **DGS**—A book on the theory of seismology, instrumentation and evaluation of records, the effect of vibrations from earthquakes, blasts, hurricanes, etc., as well as the use of knowledge of earth waves in geophysical prospecting and mapping earth structures. Chap. IV deals with *Microseisms*. *Subject Headings:* **Hurricane tracking, Microseisms, Geophysical prospecting.**—*M.R.*

PART II. A SELECTIVE ANNOTATED BIBLIOGRAPHY ON THE CLIMATOLOGY OF NORTHEAST AFRICA

By: *Harris P. Kramer*

EXPLANATORY NOTE

In this bibliography "Northeast Africa" includes the region south from the Mediterranean Sea to 5°N. lat., and east from 25°E. to 55°E. long. The countries represented in this region are: Egypt, Ethiopia, the Somalilands—British, French and Italian, and the Anglo-Egyptian Sudan. Some references to the meteorology of the bordering sea regions are included: Mediterranean and Red Seas, Gulf of Aden and Suez Canal.

Works dealing with the statistical or theoretical aspects of the Nile Flood, which include related meteorological information, are outlined under the heading, NILE FLOODS.

The dagger (†) designates an excellent bibliographic source where further references may be found. The asterisk (*) represents a good data source.

In the bibliography items are arranged chronologically by years and alphabetically by authors within each year. The scope of the subject matter may be gathered from the following Outline of Contents in which the countries are arranged alphabetically (followed by the marine areas) and the meteorological subjects listed under each country in logical order.

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- Climatic changes, 2J–36, –52, –154, –228
- Climatic and observational data, 2J–24, –210
- Marine climatology, 2J–212, –213, –218
- Atmospheric circulation and winds, 2J–70, –87, –118, –138
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BIBLIOGRAPHY ON THE CLIMATE OF NORTHEAST AFRICA

1862

2J–1 551.582(62)

*Schnepp, B., **Études sur le climat de l'Égypte.** [Studies on the climate of Egypt.] *Institut d'Égypte, Mémoires,* 1:177–368, **1862.** tables. **NN**—Extensive early work on all aspects of climatology and meteorology of the various regions of Egypt, tabulating and analyzing climatological data, which was recorded as far back as the 18th century. One chapter of the work discusses soils. *Subject Headings:* **Climatology, Egypt.**

1869

2J–2 551.582(62)

*Rayet, Georges Antoine Pons, **Recherches sur le climat de l'isthme de Suez.** [Research on the climate of the isthmus of Suez.] *Société Météorologique de France, Annuaire,* 17:118–144, **1869.** diagr., tables. **DLC**—Regular meteorological observations kept at Suez, Port Said, Ismailia, on the isthmus since 1866 are well summarized and analyzed. Mean values of usual climatological elements are tabulated. Charts show annual variations and diurnal variations by seasons of pressure, temperature and humidity for the three stations. Seasonal wind roses are drawn. *Subject Headings:* **Climatology, Suez, Egypt.**

1877

2J–3 551.582(62)

Klunzinger, C. B., **Resultate der meteorologischen Beobachtungen des Herrn Dr. Klunzinger in Kosseir (am Rothen Meere).** [Results of meteorological observations of Dr. Klunzinger at El Quseir (on the Red Sea).] *Oesterreichische Gesellschaft für Meteorologie, Zeitschrift,* 12:225–231, **1877.** table. **DLC**—Observations, 1872–1873, kept by KLUNZINGER, are summarized in table and briefly discussed. Some brief notes from ships' logs on weather conditions in the area are included. *Subject Headings:* **Climatology, El Quseir, Egypt.**

1878

2J–4 551.506.5(62,53)

*Cronstrand, Baltz, **Meteorologisk dagbok under en resa i Egypten, Arabien och Nubien aren 1836–1837.** [Meteorological diary of an expedition to Egypt, Arabia and Nubia in 1836–1837.] (*K.*) *Svenska Vetenskaps-Akademiens, Ofversigt af Förhandlingar,* No. 4:15–45, **1878.** extensive tables. **DLC, DWB**—Observations taken on an expedition from Alexandria to Thebes, Feb. 1836–Sept. 1837, are tabulated in detail. The observations of temperature and wind conditions taken several times daily, are mostly for Karnak, but with a few for numerous other places along the route. *Subject Headings:* **Observational data, Egypt, Arabia, Nubia.**

1884

2J–5 551.506.3(62)

Black, W. G., **Climate of the Delta of Egypt in 1789–1802 during the French and British campaigns.** *Royal Meteorological Society, Quarterly Journal,* 10:253–261, **1884.** 3 tables. **DLC, NN**—A scheme of the climate during the period is drawn up from records of several observers made in the course of the campaigns. Summary tables giving values for pressure, wind, rain, etc. according to the different records are appended. *Subject Headings:* **Climatic data, Egypt.**

1888

2J–6 551.582(63)

*Grablovich, Giulio, **Sul clima della stazione di Let-Marefia nello Scioa.** [On the climate of the Let-Marefia station near Scioa.] (*R.*) *Società Geografica Italiana, Bollettino,* Ser. 3, 1:537–544, **1888.** tables. **NNA**—Precipitation, temperature and wind observations made, 1886–1887, at this station in central Ethiopia (9°37′N., 39°55′E.) are discussed. *Subject Headings:* **Climatology, Ethiopia.**

2J–7 551.582(63)

*Nordmann, Richard, **Das Klima von Abessinien. 1. Teil. Verteilung der Wärme. Luftdruck und Winde.** [The climate of Abyssinia. Part 1. Distribution of temperature, atmospheric pressure and wind.] Inaug.-Diss. Marburg, **1888.** 59 p. figs., 19 tables, refs. **NNA**—Paucity of meteorological stations and observations is pointed out; but what few, then available, are noted. Distribution of temperature is taken up by regions and some fragmentary data given. Wind and pressure conditions are discussed with brief data, along with notes on the thunderstorm frequency and snow boundaries. Tables of very early observations (one 1770–1771) for varying periods and places are appended. *Subject Headings:* **Climatology, Ethiopia.**

1889

2J–8 551.586:63

Anderlind, Leo, **Die Landwirtschaft in Egypten.** [Agriculture in Egypt.] Breslau, **1889.** 97 p. **DWB**—Study of various aspects of Egyptian agriculture including topography, soil, crop types, climate, etc. Section on climate (p. 8–15, tables, refs.) describes general characteristics as they affect agriculture and gives some fragmentary means for various elements using observations some of which were made as early as 1832. Notation on this work in *Meteorologische Zeitschrift,* 5:153–155, 1888. *Subject Headings:* **Agricultural climatology, Egypt.**

2J–9 551.582(62)

*Barois, J., **Notice sur le climat du Caire.** [Note on the climate of Cairo.] *Institut d'Égypt, Bulletin*, Ser. 2, No. 10:78–212, **1889.** figs., tables. **NN.** Review by J. Hann, *Meteorologische Zeitschrift*, 3:416–420, 1891. **DWB**—Author gives a general survey of climatic characteristics of Cairo and discusses each in detail: temperature, pressure, winds, humidity, Nile flood, and possible climatic changes within the century. Observations for 1868–1888 are reported at length. *Subject Headings:* **Climatology, Climatic variations, Long period records, Cairo, Egypt.**

1890

2J–10 551.586:63

Dove, Karl, **Kulturzonen von Nord-Abessinien.** [Zones of cultivation in Northern Abyssinia.] *Petermanns Geographische Mitteilungen, Ergänzungsheft*, No. 97, **1890.** 34 p. map, tables, refs. **DWB**—Climatic elements and extent and types of vegetation and cultivation of crops are described for the various sections of the region. The map shows the different zones graphically. *Subject Headings:* **Agricultural climatology, Ethiopia.**

2J–11 551.582.2(539.3,63)

***Zum Klima des Golfes von Aden.** [The climate of the Gulf of Aden.] *Meteorologische Zeitschrift*, 7:60–63, **1890.** 2 tables, refs. **DWB**—Small number of meteorological observations are collected, tabulated and analyzed for Zeila, Berbera, and Harar. *Subject Headings:* **Climatology, Gulf of Aden, Zeila, Berbera, British Somaliland, Harar, Ethiopia.**

1896

2J–12 551.582.2(62)

*Hann, Julius, **Zum Klima von Oberägypten.** [On the climate of Upper Egypt.] *Meteorologische Zeitschrift*, 13:26–28, **1896.** tables. **DWB**—Using data from Cairo weekly meteorological bulletins, author summarizes monthly temperature and humidity values, 1891–1895, for Aswan and Wadi Halfa and compares them with Cairo. *Subject Headings:* **Climatology, Aswan, Wadi Halfa, Cairo, Egypt.**

2J–13 551.506.1(62)

*Pirona, Alexander. [**Climatological observations kept in Alexandria, Egypt.**] *Vienna, Zentralanstalt für Meteorologie, Jahrbücher*, Vols. 13–33, 1876–**1896.** Extensive tables. **NN**—Observations of the usual climatic elements made at Alexandria by Alexander Pirona, are included in each year's *Jahrbücher*, along with observations for numerous other localities of the world. Discussions of these observations appear in *Meteorologische Zeitschrift*, 5:449, 1888; 14:21, 374–378, 1897. *Subject Headings:* **Climatic data, Alexandria, Egypt.**

1897

2J–14 551.582(62)

*Canney, H. E. Leigh, **Climate of Egypt in winter.** *Royal Meteorological Society, Quarterly Journal*, 23:154–198, **1897.** 7 figs., 27 tables, refs. **NN, DWB**—Organized climatic observations were undertaken 1893–1896, Nov. to March, to study the climate of Egypt generally and of the Nile Valley especially. Paper is limited to winter conditions chiefly. Differences between climates of Upper and Lower Egypt are determined. Climatic elements are taken up for different stations, and data are tabulated. *Subject Headings:* **Climatology, Egypt.**

1898

2J–15 551.506.1(62)

*Cairo. Helwan Observatory, **Résumé mensuel des observations météorologiques.** [Monthly summary of meteorological observations.] Oct. 1883–Sept. **1898.** tables. **DLC, DWB**—Monthly observations are tabulated at length and briefly discussed. *Subject Headings:* **Climatic data, Long period records, Cairo, Egypt.**

1899

2J–16 551.583

Bey, Grant, **The climate of Egypt in geological, prehistoric, and ancient historic times.** *Victoria Institute, Journal of the Transactions*, 32:87–105, 1898–**1899.** refs. **DLC, NN**—The climate of each period is described briefly along with the author's geologic and historic evidence. *Subject Headings:* **Climatic changes, Paleoclimates, Egypt.**

2J–17 551.582(624)

Climate of Egyptian Sudan. *Royal Meteorological Society, Quarterly Journal*, 25:175, **1899. DWB**—Note from the *Scottish Geographical Magazine* briefly describes the two climatic sections of the regions, giving a few mean values (untabulated) for temperature, humidity, rain, etc. *Subject Headings:* **Climatology, Sudan.**

1900

2J–18 551.506.3(62)

*Egypt. Survey Dept., **Report on the meteorological observations—Abbassia Observatory, Cairo, 1898 and 1899, together with the mean values derived from observations of the previous 30 years, also some magnetic observations.** Cairo, **1900.** 325 p. 32 plates, extensive tables. **DWB**—Extensive meteorological observations for period are collected and tabulated in detail along with some explanatory discussion and illustrative charts and diagrams. Also: **Report on the meteorological observations made at the Abbassia Observatory, Cairo, during the year 1900 together with the Alexandria mean values derived from the observations of the previous 10 years, and climatological stations, also some magnetic and seismological observations.** Cairo, 1902. Unchecked. **DWB**—Continued later as *Meteorological Report. Subject Headings:* **Climatic data, Abbassia Observatory, Cairo, Egypt.**

2J–19 551.524

Omond, R. T., **Temperature observations in Abyssinia and Somaliland; psychrometrical observations.** *Scottish Geographical Magazine*, 16:490–493, **1900.** 3 tables. **DLC, NNA**—Fragmentary observations, made on trip in region, are very briefly noted. *Subject Headings:* **Temperature, Ethiopia, Somaliland.**

1902

2J–20 551.582(63)

Hann, Julius (ed.), **Zum Klima von Abessinien.** [On the climate of Abyssinia.] *Meteorologische Zeitschrift*, 19:242, May **1902.** table. **DLC, DWB**—Brief table is quoted from *Annales du Bureau Central Météorologique*, 1898, giving values for temperature and rain and numbers of days with thunderstorms and hail for Addis Ababa. *Subject Headings:* **Climatology, Thunderstorms, Hail, Addis Ababa, Ethiopia.**

1905

2J–21 551.582(63)

de Castro, Lincoln and Oddone, Emilio, **Risultati delle osservazioni meteorologiche ad Addis-Abeba e Addis-Alem nel bacino dell'Hauash in Abissinia.** [Results of meteorological observations at Addis Ababa and Addis Alem in the Hauash Basin, Abyssinia.] (*R.*) *Società Geografica Italiana, Bollettino*, Ser. 4, 6:19–30, **1905.** 2 photos, diagrs., 2 tables, 2 refs. **NNA**—Temperature and precipitation observations at these localities, 1901–1904, are summarized in tables and diagrams and briefly discussed. *Subject Headings:* **Climatology, Addis Ababa, Ethiopia.**

2J–22 551.506.1(62)

*Egypt. Survey Dept., **Meteorological observations . . . [monthly]. 1900-1905.** tables. **DWB**—(Earlier: put out by Cairo, Helwân Observatory.) Monthly summaries of meteorological observations for various stations are tabulated. No discussion. Values for pressure, temperature, relative humidity, vapor tension, cloud, wind, rainfall and evaporation are given. *Subject Headings:* **Climatic data, Egypt.**

2J–23 551.543

*Lyons, Henry George, **On the relation between variations of atmospheric pressure in North-east Africa.** *Royal Society of London, Proceedings, Ser. A*, 76:66–86, **1905.** 4 figs., 6 tables, refs. **NN**—Author attempts to show that pressure anomalies are closely related to the excess or deficit of the monsoon rainfall of Abyssinia and consequently to the Nile flood. Available data concerning Abyssinian rainfall are summarized and other data for flood and pressure conditions from various places in Northeast Africa are examined and compared. *Subject Headings:* **Atmospheric pressure, Nile floods, Ethiopia, Northeast Africa.**

1906

2J–24 551.506.3(62)

*Egypt. Survey Dept., **Summary of meteorological observations made in Egypt and Sudan, March 1904–Dec. 1905.** Cairo, 1904–1906. Extensive maps, tables. **DWB**—General conditions for each month are analyzed from data for numerous points in region. Elements of pressure, temperature, wind, rainfall, and state of the Upper Nile are considered. *Subject Headings:* **Fragmentary climatic data, Upper Nile River, Egypt, Sudan.**

2J–25 551.582(635)

*Tancredi, A. M., **Sul clima di Addi-Ugri . . . and . . . del Serahê (colonia Eritrea).** [Climate of Addi-Ugri . . . and . . . of Serahê (colony of Eritrea).] (*R.*) *Società Geografica Italiana, Bollettino*, Ser. 4, 4:76–109, 1903 and *ibid.*, 7:1192–1250, **1906.** diagrs., tables. **NNA**—Climatic data for Addi-Ugri, 1894–1895, 1899–1905, and for Chenafena, are discussed and tabulated at length. Wind roses, rainfall and temperature diagrams are included. *Subject Headings:* **Climatology, Eritrea.**

1907

2J–26 551.578.7

[A remarkable hail storm.] *Nature*, London, 77:15, **1907. DLC**—Very brief descriptive account of a short, severe hailstorm and lightning at Cairo, Oct. 21, 1907. *Subject Headings:* **Hail, Cairo, Egypt.**

2J–27 551.582(635)

*Eredia, Filippo and Memmo, Giovanni, **Contributo alla climatologia di Massaua.** [Contribution to the climatology of Massaua.] (*R.*) *Società Geografica Italiana, Bollettino*, Ser. 4, 8:851–866, **1907.** tables, 9 refs. **NNA**—Observations of climatological elements made at Massaua, 1885–1902, are summarized in tables and discussed. *Subject Headings:* **Climatology, Massaua, Eritrea.**

2J–28 551.506.5(62)

Hann, Julius, **Die meteorologischen Beobachtungen des Freiherrn Kurt v. Grünau in der Libyschen Wüste.** [Meteorological observations of Kurt v. Grünau in the Libyan Desert.] *Petermanns Geographische Mitteilungen*, 53:164–165, **1907.** table, refs. **NNA**—Meteorological observations kept by GRÜNAU on an expedition into the Libyan Desert of Egypt, 1899–1900, are briefly discussed and summarized in a small table. *Subject Headings:* **Climatic data, Libyan Desert, Egypt.**

2J–29 551.582.2(62)

*Keeling, Bertram Francis E., **The climate of Abbassia near Cairo.** *Egypt, Survey Dept. Paper* No. 3, **1907.** 61 p. 7 figs., 29 tables, refs., append. **NN**—Climatological elements are taken up separately and representative data for the period from 1898 to 1903 are given for: pressure, temperature, humidity, clouds, sunshine and fog, wind, rainfall and evaporation. Appendix I gives monthly means and departures from 1869 to 1903. Summary in German by JULIUS HANN in *Meteorologische Zeitschrift*, 25:458–460, 1908. *Subject Headings:* **Climatology, Abbassia, Egypt.**

1908

2J–30 551.513.7:551.577.2(63)

Craig, J. I., **A meteorological expedition to Addis Ababa in 1907.** *Cairo Scientific Journal*, 2(27), Dec. **1908.** 3 refs. Reprint, 5 p. **NNA**—Preliminary report is made on expedition into Abyssinia in May 1907, to study meteorological conditions controlling the Nile flood. Records of humidity, temperature, rainfall are given and less complete records of pressure and other climatic elements. Results are discussed and conclusion drawn that a wind current comes from the South Atlantic where it obtains the moisture that is precipitated in Abyssinia and then finds its way to Egypt as the Nile flood. *Subject Headings:* **Correlations, Atmospheric circulation, Precipitation, Nile floods, Ethiopia.**

2J–31 551.586:616

Craig, J. I., **Mortality in Cairo and relative humidity.** *Cairo Scientific Journal*, 2:101–104, **1908.** table, ref., 9 equations. **NNM**—Preliminary report made on investigation of the connection between mortality and relative humidity. Some indication given that a rough connection exists: the higher the humidity, the lower the death rate. *Subject Headings:* **Medical climatology, Relative humidity, Cairo, Egypt.**

2J–32 551.54

Craig, J. I., **The relation between Nile floods and atmospheric pressure.** *Cairo Scientific Journal*, 2:242–244, **1908.** refs., 3 equations. **NNM**—Author examines briefly the correlation between the deviations of the volume of the Nile flood from its mean value and the negative deviations of atmospheric pressure. *Subject Headings:* **Atmospheric pressure, Nile floods, Northeast Africa.**

2J–33 551.506.3(62)

*Hann, Julius, **Resultate der meteorologischen Beobachtungen in Oberägypten und im Sudan.** [Results of meteorological observations in Upper Egypt and Sudan.] *Meteorologische Zeitschrift*, 25:559–562, **1908.** tables, ref. **DWB**—Tabulated summary is made of climatological observations kept, 1901–1905, at Khartoum, Aswan, Berber, Ed Dueim and Mongala. *Subject Headings:* **Climatic data, Egypt, Sudan.**

2J–34 551.557

Keeling, Bertram Francis E., **Upper air research at Mongalla.** *Cairo Scientific Journal*, 2:355–358, **1908.** 2 plates, table. **NNM**—Upper winds examined with a view to studying the summer rains of Abyssinia. Direction and velocity of winds plotted. *Subject Headings:* **Upper air winds, Mongalla, Ethiopia.**

2J–35 551.506.7(62,624)

*Keeling, Bertram Francis E. and Curry, P. A., **Upper air research at Helwan Observatory Nov. 1907.** *Cairo Scientific Journal*, 2:29–30, **1908.** 2 tables. **NNM**—Results of four balloon and four kite ascents at Helwân Observatory tabulated briefly. Other notes of similar nature for succeeding months through July 1908, appear *ibid.*, p. 60–61, 104–105, 154–156, 200–201, 270–271, 294–295, 296–297. (July observations were made at Khartoum.) *Subject Headings:* **Upper atmosphere research, Helwân, Egypt, Khartoum, Sudan.**

2J–36 551.582(61)

Lyons, Henry George, **Some unsolved problems of the Nile Basin.** *Cairo Scientific Journal*, 2:79–94, **1908.** **NNM**—Contains discussion of meteorological problems of the region (p. 84–91), taking up the questions of the monsoon rains of Abyssinia and the Sudan; of climatic changes in the whole Nile region; of underground water and Nile levels. *Subject Headings:* **Precipitation, Climatic changes, Hydrology, Nile Basin, Northeast Africa.**

2J–37 551.555.8

Sheppard, V. L. O., [**Notes on sandstorms at Kharga.**] *Cairo Scientific Journal*, 2:164, **1908.** **NNM**—Very brief note describes meteorological conditions during four-day sand storm March 21–24, 1908, at Kharga oasis. *Subject Headings:* **Sand storms, Kharga Oasis, Egypt.**

2J–38 551.577

*Türstig, R., **Diurnal frequency and direction of approach of rainstorms in the Sudan.** *Cairo Scientific Journal*, 2:358–363, **1908.** tables. **NNM**—Tables show diurnal occurrence and direction of approach of rain and thunderstorms in various parts of Sudan, 1905–1907, together with similar observations for Omdurman for 1900–1904. *Subject Headings:* **Rainstorms, Sudan.**

2J–39 551.577

Türstig, R., **Rainfall in the Sudan.** *Cairo Scientific Journal* 2:391–398, **1908.** tables. **NNM**—Records of rainfall at Khartoum and Omdurman for eight years 1900–1907, are examined. Conclusions drawn as to direction, distribution, variations, etc. Fragmentary data are included. (Brief review by J. HANN in *Meteorologische Zeitschrift*, 26:569–570, 1909.) *Subject Headings:* **Precipitation, Khartoum, Omdurman, Sudan.**

1909

2J–40 551.509.31

§Craig, J. I., **Types of weather in Egypt.** *Cairo Scientific Journal*, 3:70–72, **1909.** 8 figs. **NNM**—Author discusses forecasting from telegraphed meteorological reports and synoptic charts, constructed from them. Grouping of isobaric curves are classified in seven ways, each grouping of which is generally followed by a distinctive kind of weather. Eight illustrative synoptic charts are included. *Subject Headings:* **Weather forecasting, Synoptic analysis, Egypt.**

2J–41 551.557

Curry, P. A., **Upper air research at Roseires; preliminary notice of the results obtained at Roseires during May and July 1909.** *Cairo Scientific Journal*, 3:254–256, **1909.** 2 diagrams, table. **NNM**—Author studies circulation of the atmosphere above the Blue Nile area during the rainy season and attempts to confirm that rains probably come from the South Atlantic. Wind direction and predominance and velocity at different altitudes are diagrammed. *Subject Headings:* **Upper air winds, Atmospheric circulation, Precipitation, Roseires, Sudan.**

2J–42 551.582(635)

Dainelli, G. and Marinelli, O., **Le regioni climatiche della Colonia Eritrea.** [Climatic regions of the colony of Eritrea.] *Rivista Geografica Italiana*, 16:185–208, **1909.** map, refs. **NNA**—Climatic zones of Eritrea are outlined, described and shown on a chart; no data are included; numerous references are given in footnotes. *Subject Headings:* **Climatic regions, Eritrea.**

2J–43 551.582(63)

*de Castro, Lincoln, **La citta e il clima di Addis Abeba.** [The city and the climate of Addis Ababa.] *Società Geografica Italiana, Bollettino*, Ser. 4, 10A:409–442, **1909.** 13 figs., map, tables.

NNA—Climatological observations, 1901–1907, at Addis Ababa are tabulated and very briefly discussed along with description and pictures of the city in general. *Subject Headings:* **Climatology, Addis Ababa, Ethiopia.**

2J–44 **551.577.31**

Dodd, F. M. L., **Diurnal variation of rainfall at Alexandria in 1908.** *Cairo Scientific Journal*, 3:125–126, 1909. table. **NNM**—Brief table and discussion consider two elements of diurnal variation, quantity of rain and its frequency. *Subject Headings:* **Diurnal precipitation variations, Alexandria, Egypt.**

2J–45 **551.557**

Hann, Julius, **Die Luftströmungen in den verschiedenen Höhen während der Regenzeit im ägyptischen Sudan.** [Air currents at different heights during the rainy season in the Sudan.] *Meteorologische Zeitschrift*, 26:565–566, 1909. table. **DWB**—Results of pilot balloon ascents are briefly summarized and the importance of the upper air winds is pointed out in regard to the rainy season and the Nile flood. *Subject Headings:* **Upper air winds, Precipitation, Nile floods, Sudan.**

2J–46 **551.594**

*Hurst, Harold Edwin, **A discussion of the observations on atmospheric electricity at Helwan Observatory from March 1906 to February 1908.** *Egypt, Survey Dept., Paper* No. 10, 1909. 65 p. fig., 6 plates, 12 tables, refs., equations. **NNA**—Full account of instruments used is given, and numerical results obtained are summarized. Comparison is made of potential gradient with other phenomena such as: sunshine, temperature, pressure, vapor pressure, wind direction and velocity. Abnormal phenomena, such as rain, dust and sand storms, and khamsins are discussed separately in their relations. Future problems are outlined. *Subject Headings:* **Climatology, Atmospheric electricity, Helwân, Egypt.**

2J–47 **551.583**

Keeling, Bertram Francis E., **Climate changes in Egypt.** *Cairo Scientific Journal*, 3:7–10, 1909. diagram, 4 refs. **NNM**—Records of Abbassia Observatory are examined to determine possible climatic changes within the "last" decades. Summary comparisons of temperature and humidity and rainfall values are included for 1870–1908. Also: **Additional notes.** *Ibid.*, p. 86–88. *Subject Headings:* **Climatic variations, Egypt.**

2J–48 **551.573**

*Keeling, Bertram Francis E., **Evaporation in Egypt and the Sudan.** *Egypt, Survey Dept., Paper* No. 15, 1909. 29 p. fig., tables, refs., equations. **NNA**—Report summarizes the "present" knowledge of the rate of evaporation from water surfaces in Egypt. A comparison of evaporimeters is made. A summary is given of rates of evaporation observed at second-order meteorological stations in the Nile valley of Egypt and the Sudan. Attempt is made to evaluate rate of evaporation from open water surfaces at Aswan and other places in Egypt, and from the Nile near Cairo. Relation pointed out between evaporation and other meteorological factors in region; diurnal variation of evaporation is described. Representative tables, included. *Subject Headings:* **Evaporation, Egypt, Sudan.**

2J–49 **551.574**

Keeling, Bertram Francis E., **Occurrence of mists at Giza.** *Cairo Scientific Journal*, 3:14–15, 1909. **NNM**—Results of 1908 observations of presence of morning mists at Giza are tabulated briefly. Over 50% of summer mornings found to be misty. *Subject Headings:* **Mist, Giza, Egypt.**

2J–50 **551.521.11**

Keeling, Bertram Francis E., **Sunshine records at Helwan.** *Cairo Scientific Journal*, 3:15–17, 1909. table, ref. **NNM**—Table shows amount of sunshine (very variable) during four winter months of past 6 years, along with some data on cloud, rainfall and temperature. *Subject Headings:* **Sunshine, Helwân, Egypt.**

2J–51 **551.553**

Keeling, Bertram Francis E., **Wind direction at Helwan.** *Cairo Scientific Journal*, 3:145–146, 1909. 3 diagrams. **NNM**—Diagrams show variation in wind direction at Helwân during the day for Jan., July and the year. *Subject Headings:* **Winds, Helwân, Egypt.**

2J–52 **551.583**

†Leiter, Hermann, **Die Frage der Klimaänderung während geschichtlicher Zeit in Nord Afrika.** [The question of climatic changes during historic time in North Africa.] (*K.K.*) *Geographische*

Gesellschaft in Wien, Abhandlungen, 8, No. 1, **1909.** 143 p. 5 figs., tables, numerous refs. **DWB**—The question of climatic changes is outlined, and reference made to other observations and analyses of the problem. The climate of the region in present time is described for sections: the Mediterranean region in general; then for Morocco, Algeria and Tunis, Northeast coast of Africa, and the Sahara. Secondly, the indications of climate in ancient times are given and compared with the recent temperature, wind, humidity, flow of rivers, plant and animal life, and desert conditions. Conclusions are drawn; a chart of the monthly distribution of precipitation by regions is appended. *Subject Headings:* **Climatic changes, Historical climates, Northeast Africa, Northwest Africa.**

2J–53 551.582.1(63)

Türstig, R., **Note on the climate of the southwestern plateau of Abyssinia.** *Cairo Scientific Journal*, 3:19–20, **1909.** **NNM**—Brief descriptive notes quoted from a letter. *Subject Headings:* **Climatology, Ethiopia.**

2J–54 551.593.1

*Xydis, C., **Terrestrial refraction at Alexandria.** *Cairo Scientific Journal*, 3:129–133, **1909.** tables. Note by J. I. Craig and sequel by B. F. E. Keeling, p. 134–135. **NNM**—Measurements of terrestrial (vertical) refraction made and tabulated. Brief meteorological relations and possible explanations ventured. *Subject Headings:* **Atmospheric refraction, Alexandria, Egypt.**

1910

2J–55 551.582.3(63)

Ball, John, **Climatological diagrams; Egyptian and Sudan stations.** *Cairo Scientific Journal*, 4:278–279, **1910.** 2 plates. **NNM**—Two diagrams are constructed, one plotting temperature and relative humidity for Egyptian stations and the other, for Sudan stations. *Subject Headings:* **Climatic charts, Egypt, Sudan.**

2J–56 551.513.7:551.577.2(63)

Craig, J. I., **England-Abyssinia-the South Atlantic: a meteorological triangle.** *Royal Meteorological Society, Quarterly Journal*, 36:341–360, **1910.** 8 figs., table, refs. **NN**—Concluded that Abyssinian summer rain has its origin in the South Atlantic, but as for a direct relationship between the weather of England and the South Atlantic and Abyssinia, results of the investigations are only suggestive rather than conclusive. *Subject Headings:* **Precipitation, Correlations, England, Ethiopia, South Atlantic.**

2J–57 551.583

Hume, William Fraser, **Climatic changes in Egypt during post-glacial times.** (In **Postglaziale Klimaveränderungen.** Stockholm, **1910.** p. 421–424. 2 refs.) Reprint available. **NNA**—Evidence, adduced for gradual desiccation where desert conditions now prevail, is outlined and briefly discussed. *Subject Headings:* **Climatic changes, Egypt.**

2J–58 551.583

Huntington, Ellsworth, **The Libyan oasis of Kharga.** *American Geographical Society, Bulletin*, 62(9):641–661, Sept. **1910.** 3 figs., ref. **NNA**—Facts are taken from BEADNELL's book, "An Egyptian oasis," to determine what they indicate as to climatic conditions of the Libyan Desert in the historic past. *Subject Headings:* **Historical climates, Climatic changes, Kharga Oasis, Libyan Desert, Egypt.**

2J–59 551.582(62)

*Lyons, Henry George, **Climatic influences in Egypt and the eastern Sudan.** *Royal Meteorological Society, Quarterly Journal*, 36:211–235, **1910.** 6 figs., 4 tables, refs. **DWB**—History of knowledge of the Nile flood is outlined, and a general survey is given of the climatic regions and elements of the Sudan area and its importance in the Nile flood. Representative figures and summary tables illustrate the discussion. *Subject Headings:* **Climatology, Nile floods, Egypt, Sudan.**

2J–60 551.513:551.577

Wagner, A., **Untersuchung der Luftströmungen während der Regenzeit im ägyptischen Sudan.** [Study of the air currents during the rainy season in Egyptian Sudan.] *Meteorologische Zeitschrift*, 27:227–228, **1910.** table, 3 refs. **DWB**—Upper air conditions, which bring rains to the Sudan from the South Atlantic, are discussed briefly with references to fuller developments in other publications. *Subject Headings:* **Atmospheric circulation, Precipitation, Sudan.**

1911

2J–61 551.524.2(6)

Craig, J. I., **Isotherms for Africa.** *Cairo Scientific Journal*, 5:124–125, **1911.** 2 charts. **NNM**—Two maps of all of Africa show Jan. and July isotherms. Chief points to be noticed are stressed. *Subject Headings:* **Temperature distribution, Africa.**

2J–62 551.524

Craig, J. I., **Notes on temperature at Alexandria.** *Cairo Scientific Journal*, 5:8–12, **1911.** 3 tables, 2 refs. Reprint available. **NNA**—Correlation table formed from a comparison of temperatures and humidities at Alexandria based on weekly means for 1904–1908. Differences between, and air and sea-surface temperatures are noted and compared with wind directions. The conclusion is drawn that the controlling factor in the temperature of Alexandria is the temperature of the Mediterranean Sea or, less probably, some extraneous cause affecting both sea and air temperature alike. *Subject Headings:* **Temperature, Alexandria, Egypt.**

2J–63 551.582(6)

*Knox, Alexander, **The climate of the continent of Africa.** Cambridge, **1911.** 552 p. 14 plates, numerous tables, refs. **DLC, NNA**—A fairly generalized descriptive review is made of the climates of all regions and countries of the continent respectively, citing numerous sources of observations kept by meteorological services or individuals, and reproducing some selected illustrative data. Section on North Africa includes Morocco, Algeria, Tunisia, Tripoli, Lower and Upper Egypt, Sahara; the section on Eastern Tropical Africa includes similar treatment of Anglo-Egyptian Sudan, Eritrea, Abyssinia, Somaliland, and other more southern sections. Western Tropical and South Africa are also considered. *Subject Headings:* **Climatology, Africa.**

2J–64 551.573

*Ross, W. McGregor, **Evaporation at Kisumu.** *Cairo Scientific Journal*, 5:128, **1911. NNM**—Evaporation figures, 1908–1910, at Kisumu (on the Victoria Nyanza), in the Nile Basin are summarized in table. *Subject Headings:* **Evaporation, Kisumu, Kenya.**

1912

2J–65 551.506.3(62)

*Comissot, N. A., **Tor. The village.—The quarantine station.—The meteorological station.** *Cairo Scientific Journal*, 6:113–119, **1912.** 4 figs., diagram, 5 tables. **NNM**—From p. 115 to 119 author relates temperature, pressure, wind, and humidity values kept at the meteorological station between 1907 and 1911. *Also:* "Notes on Tor" (meteorological). *Ibid.*, 7:15–16, 1913. *Subject Headings:* **Climatology, Observational data, Tor, Egypt.**

2J–66 551.573

*Craig, J. I., **Evaporation in Egypt and the Sudan.** *Cairo Scientific Journal*, 6:103–107, **1912.** 3 tables, refs. **NNM**—Author derives comparable and reasonable means for different regions in Egypt and the Sudan. Tables are given for six districts along the Nile, using data, 1907–1911. *Subject Headings:* **Evaporation, Egypt, Sudan.**

2J–67 551.586:616

Craig, J. I., **Meteorological factors of mortality in Cairo and Alexandria.** *Cairo Scientific Journal*, 6:246–250, Sept.-Oct. **1912.** chart, table, ref. Reprint available. **NNA**—This paper is an extension of an earlier work (*see item*—2J–31), in which negative correlation between mortality and relative humidity was obtained for Cairo only. Effect of variation of humidity is found so small in Alexandria it may be neglected. *Subject Headings:* **Medical climatology, Alexandria, Cairo, Egypt.**

2J–68 551.577.2(62)

*Craig, J. I., **Rainfall in Lower Egypt.** *Cairo Scientific Journal*, 6:85–89, **1912.** chart, 4 tables. **NNM**—Available observations of rainfall in Lower Egypt are reviewed. Annual totals of rainfall at stations of Lower Egypt are shown for as early as 1868 to 1911. Mean annual rainfall values are tabulated for numerous stations of region. Some monthly values are given. Chart shows isohyets over Lower Egypt. *Subject Headings:* **Precipitation distribution, Lower Egypt.**

2J–69 551.506.1(05)(62)

*§Egypt. Survey Dept., **Summary of the weather in Egypt, in the Sudan, and the surrounding region . . . [1906]–1912.** (Monthly.) [Cairo, 1906?–1912.] charts, tables. **DWB**—Description of general conditions, tables, and synoptic charts are given for each month, covering numerous stations in region. *Subject Headings:* **Climatic data, Synoptic charts, Egypt, Sudan.**

2J–70 551.552

Krugler, H., **Die Windverhältnisse im östlichen Mittelmeer und seinen Randgebieten.** [Wind conditions in the eastern Mediterranean and its bordering regions.] Inaug.-Diss.—Berlin, **1912.** 233 p. 14 figs., extensive tables, refs. **NNA**—Author discusses fully all available material relating to winds of the Eastern Mediterranean and of Northeast Africa and describes outstanding features of the distribution of pressure over southern Europe and North Africa, without, however, discussing the actual observations. (*Same item* as 2E–42 in May 1951 *Meteorological Abstracts.*) *Subject Headings:* **Winds, Atmospheric pressure, Eastern Mediterranean, North Africa.**

2J–71 551.573

*Türstig, R., **Verdunstung auf dem Nil bei Khartum.** [Evaporation from the Nile at Khartoum.] *Meteorologische Zeitschrift,* 29:454–462, **1912.** 10 tables. **DWB**—Procedures are described. Temperature differences of air and water are noted; wind conditions are charted; and evaporation is related to these climatological conditions. Tables are brief and cover only a two-months period, March and April. *Subject Headings:* **Evaporation, Nile River, Khartoum, Sudan.**

2J–72 551.524:551.55

Bliss, E. W., **Correlation of wind direction and temperature.** *Cairo Scientific Journal,* 7:177–179, **1913.** figs., 5 tables. **NNM**—Work undertaken to determine if hot weather a Khartoum was connected with easterly winds. Same method then applied to Alexandria and Helwân. Methods are discussed and representative data for 1908–1912 are given. *Subject Headings:* **Winds, Temperature, Alexandria, Helwân, Egypt, Sudan, Khartoum.**

2J–73 551.515.4(62)

Bliss, E. W., **Thunderstorm statistics of Egypt.** *Cairo Scientific Journal,* 7:130–132, **1913.** 3 tables. **NNM**—These three tables summarize a list of all available records of thunderstorms in Egypt, "recently" prepared by the Meteorological Service for the years 1868–1912. *Subject Headings:* **Thunderstorms, Egypt.**

2J–74 551.524:551.588

*Craig, J. I., **Effects of the Mediterranean Sea on temperature in Egypt.** *Cairo Scientific Journal,* 7:103–110, **1913.** chart, 5 tables, 2 refs. **NNM**—Monthly values of sea temperature for region between Crete, Cyprus and Egypt for 1890–1909, are compared with corresponding means for Alexandria and Abbasia. *Subject Headings:* **Temperature, Egypt, Mediterranean Sea.**

2J–75 551.577.2:551.579.4(61)

*Lyons, Henry George and Craig, J. I., **Rains of the Nile Basin and the Nile flood.** . . . *Egypt, Survey Dept. Papers,* Nos. (first two are unnumbered), 2, 9, 14, 17, 26, 27, 32 (for respective years) **1905–1913.** maps, figs., tables, refs. **DWB, NNA**—Each report includes observational data for the preceding year, discusses the normal distribution of rainfall, the rainfall of that year, the low stage preceding the flood, the flood of that year, as well as other particular phenomena of the flood. In No. 17, H. G. Lyons discusses the origin of the Abyssinian summer rain: it has its origin in the South Atlantic, whence moisture is carried by a broad westerly and southwesterly wind, traversing Africa and ascending the slopes of the Abyssinian tableland. This ascent keeps the air near point of saturation and in combination with diurnal ascensional currents results in copious precipitation. In addition there is along the eastern slopes of this tableland a second, smaller maximum of rainfall, occurring in April or May, probably due to southeast wind from the Indian Ocean. *Subject Headings:* **Precipitation distribution, Nile floods, Nile Basin, Northeast Africa.**

2J–76 551.582.2(677)

*Eredia, Filippo, **Sul clima della Somalia Italiana Meridionale.** [The climate of Italian Somaliland.] *Italy, Ministero Delle Colonie, Monografie e Rapporti Coloniali,* No. 14, **1913.** 48 p. tables, ref. **NN**—Climatology discussed in general and then each element in detail: pressure, winds, humidity, temperature, cloud, and precipitation. Tabulated data are mostly for 1910–1912. Discussion and summary by J. Hann in *Meteorologische Zeitschrift,* Vol. 31:458–460, **1914.** *Subject Headings:* **Climatology, Italian Somaliland.**

2J–77 551.524:551.586:631

Hurst, Harold Edwin, **Frequency of low temperatures in the Sudan and its effect on the cotton crop.** *Cairo Scientific Journal,* 7:265–268, **1913.** tables. **NNM**—Statistics for 1902–1912 and relations between temperatures and cotton crop sought. Risky regions for growing cotton in Sudan are noted. *Subject Headings:* **Temperature, Agricultural climatology, Cotton, Sudan.**

2J–78 551.582(62)

*Wilcocks, W. and Craig, J. I., **Meteorology of Egypt,** *and:* **. . . of the upper basin of the Nile.** (In authors' **Egyptian irrigation.** 3rd ed. Vol. 1, sections 5 and 6. London, **1913.** p. 11–32. map, 8 tables, refs.) **NNA**—Summary is given of the meteorology of Egypt from the point of view of the hydraulic engineer. General atmospheric circulation as applied to the Nile Valley is discussed, then the regimen of winds in the upper part of the basin, chiefly as affecting the rains; then rainfall distribution, possible climatic changes in historical times, temperature and humidity, and other phenomena. Summary tables are included. *Subject Headings:* **Climatology, Hydrology, Irrigation, Egypt, Nile Basin.**

1914

2J–79 551.515.4(624)

*Bliss, E. W., **Notes on Sudan weather.** *Cairo Scientific Journal,* 8:161–162, **1914.** 3 tables. **NNA**—One table gives number of days with thunder or lightning at various places in the Sudan by month; another shows diurnal variation of rainfall for various points, averaged for 1909–1913. *Subject Headings:* **Thunderstorms, Precipitation, Sudan.**

2J–80 551.506.1(62)

*[**Brief notes on weather of each month.**] *Cairo Scientific Journal,* 1908–**1914. NNM**—Each number of the periodical contains brief discussion and tables containing averages for the region from the Mediterranean coast of Egypt south to the Equatorial regions and showing progress of the monsoon. *Subject Headings:* **Climatic data, Egypt, Sudan.**

2J–81 551.576.3

*Comissot, N. A., **Frequencies of cloud-forms at Helwan, 1904–1913.** *Cairo Scientific Journal,* 8:189–192, **1914.** 3 tables. **NNA**—Observations of cloud forms at Helwan Observatory, 1904–1913, are tabulated and classified to determine diurnal and annual variation of clouds in Egypt. *Subject Headings:* **Cloud variations, Egypt.**

2J–82 551.524

Comissot, N. A., **The hot wave of May 29, June 2, 1914.** *Cairo Scientific Journal,* 8:149–151, **1914.** 2 figs., table. **NNA**—Weather conditions during spread of this heat wave over Egypt are noted, and temperature is charted and tabulated for different places in Egypt. *Subject Headings:* **Heat waves, Egypt.**

2J–83 551.582.2(63)

*Eredia, Filippo and de Castro, Lincoln, **Sulla climatologia dell'Etiopia.** [On the climatology of Ethiopia.] (*R.*) *Società Geografica Italiana, Bolletino,* Ser. 5, 3:845–884, **1914.** 3 figs., numerous tables, refs. **NNA**—Climatological observations kept in various parts of Ethiopia, 1901–1911, are tabulated and analyzed at length. *Subject Headings:* **Climatology, Ethiopia.**

2J–84 551.582(62)

Knox-Shaw, Harold, **A comparison between the climates of the Khedivial Observatory and Town of Helwan.** *Cairo Scientific Journal,* 8:112–114, **1914.** 5 refs., table. **NNA**—Rather unimportant article making a brief comparison using data from Helwân before observatory was founded. Table shows climatological values for the town and later values for the observatory. Wind shows greatest variation. *Subject Headings:* **Climatology, Helwân, Egypt.**

1916

2J–85 551.582(62,262)

*Lyons, Henry George, **The winter climate of the Eastern Mediterranean.** *Royal Meteorological Society, Quarterly Journal,* 42:65–84, **1916.** 14 tables, ref. **DWB**—General discussion and tabulated values are included for Lower Egypt, Alexandria, Port Said, and Cairo, as well as for other Eastern Mediterranean regions, Levant Coast, Balkans, etc. *Subject Headings:* **Climatology, Egypt, Eastern Mediterranean.**

1917

2J–86 551.577.2(6)

Eckardt, W. R., **Über die Ursachen der jahreszeitlichen Regenfälle in Afrika mit besonderer Berücksichtigung der Küstengebiete.** [The causes of the annual rainfalls in Africa especially with respect to the coastal regions.] *Annalen der Hydrographie und Maritimen Meteorologie,* 45:7–19, **1917.** refs. **DWB**—General discussion including the northeastern region of Africa. The figure shows air pressure distribution over Northeast Africa, the Near East and southern Europe, after KRUGLER (1912). *Subject Headings:* **Precipitation, Northeast Africa, Africa.**

2J–87 551.513

*Lyons, Henry George, **The distribution of pressure and circulation over Northern Africa.** *Royal Meteorological Society, Quarterly Journal*, 43:116–150, **1917.** 6 figs., 5 tables, refs. **DWB**—Author surveys works on pressure and winds over the region up to that time and attempts to establish patterns of the distribution of pressure and of circulation of air over North Africa at different seasons of the year. *Subject Headings:* **Atmospheric pressure, Atmospheric circulation, North Africa.**

1919

2J–88 551.577.2(569.4,62)

Späth, W., **Auffällige Regenverteilung in Südpalästina und Ägypten.** [Remarkable rainfall distribution in south Palestine and Egypt.] *Zeitschrift für angewandte Meteorologie*, 36:78–79, **1919.** 3igs. **NN**—Brief note points out decreasing amount of rainfall in the coastal region from Palestine south to Egypt. *Subject Headings:* **Precipitation distribution, Palestine, Egypt.**

1920

2J–89 551.582(677.2)

*Brooks, C. E. P., **The meteorology of British Somaliland.** *Royal Meteorological Society, Quarterly Journal*, 46:434–438, **1920.** 4 tables. **DWB**—Short discussion and summarized tables are given of 12 years observations at Berbera along with some fragmentary data for Sheikh in the interior. *Subject Headings:* **Climatology, Berbera, Sheikh, British Somaliland.**

2J–90 551.555.8

Späth, W., **Die Sciroccos der Sinaiwüste.** [The siroccos of the desert of Sinai.] *Meteorologische Zeitschrift*, 37:26–29, **1920.** 5 figs., ref. **DWB, DLC**—Description of this phenomenon is given and causes, topographical and meteorological, are suggested. (*Same abstract* as No. 2E–69 in May 1951 *Meteorological Abstracts.*) *Subject Headings:* **Winds, Sirocco, Sinai Peninsula, Egypt.** —*N.S.*

1921

2J–91 551.586

Grabham, George Walter, **Some factors in thermal sanitation in the tropics.** *Journal of Hygiene*, Cambridge, 19(3):245–276, **1921. DLC**—Measured temperatures of different colored objects exposed to sun in Sudan—under one thickness of thin cloth, and by thermometers inserted in small cyclindrical tin flasks. *Subject Headings:* **Bioclimatology, Sudan.**—*C.E.P.B.*

2J–92 551.577

Sutton, L. J., **Rainfall in Egypt in June 1921.** *Cairo Scientific Journal*, 10(104–105):44–45, Jan.–June **1921. DWB**—Brief description of unusually heavy rain and some of the attending meteorological conditions. *Also:* **Rainfall in Egypt on December 8th and 9th, 1921.** *Ibid.*, (106–107):90–94, May 1922. 6 figs. **DWB**—An unusual pressure and heavy rainfall combination over the Delta is analyzed. *Subject Headings:* **Precipitation, Egypt.**

1922

2J–93 551.521.1

*Knox-Shaw, Harold, **Solar radiation 1915–1921.** *Helwan Observatory Bulletin*, No. 23:2–256, [1922]. 9 tables, refs., 3 equations. **NNA**—A selection from results of solar radiation measurements, 1915–1921, is given and various methods of reduction are considered; reasons outlined for confirming the opinion that the Helwân climate does not admit of determining variations in the solar constant from phyheliometer observations. (Earlier studies of solar radiation appear in *ibid.*, No. 14, by T. L. Eckersley; and in No. 17, by H. Knox-Shaw—unchecked.) *Subject Headings:* **Solar radiation, Helwân, Egypt.**

1923

2J–94 551.501.1

Egypt. Physical Dept., **Handbook of instructions for meteorological observers in Egypt, the Sudan, and Palestine.** Cairo, **1923.** 56 p. 18 figs., 12 tables. **DWB**—One part contains instructions for taking and recording observations and notes on care of instruments. The second part gives fuller descriptions of the various instruments in use at meteorological stations of the service and instructions as to how they should be exposed. A few conversion tables are included. *Subject Headings:* **Instruction for observers, Handbooks, Egypt, Sudan, Palestine.**

2J–95 551.577:551.579.4

*Hurst, Harold Edwin, **The rains of the Nile Basin and the Nile flood of 1913.** *Egypt, Physical Dept. Paper* No. 12, **1923.** 98 p. 8 plates, extensive tables. **NNA**—Contents include chapters on:

the normal distribution of rainfall and rainfall of 1913; the low stage preceding the Nile flood and the flood of 1913, along with a resumé of the 1912 flood and the low stage of 1913; and, finally, tables of rainfall and river gage readings which comprise most of the report. *Subject Headings:* **Precipitation, Nile floods, Nile Basin.**

2J–96 551.515.1(62)

§Sutton, L. J., **A barometric depression of the Khamsin type.** *Egypt, Physical Dept. Paper* No. 10:1–8, **1923.** 12 plates, 2 tables. **NNA**—Paper describes in detail a desert depression April 1 and 2, 1922, more severe than usual, but considered typical to a large extent. Summary of weather experienced at Cairo March 31 to April 4 is given. *Subject Headings:* **Air masses, Khamsin, Egypt, Near East.**

2J–97 551.582(624)

*Sutton, L. J., **The climate of Khartoum.** *Egypt, Physical Dept. Paper* No. 9, **1923.** 65 p. 18 plates, photos, 37 tables, refs. **NNA**—Thorough survey of climate of Khartoum is made including numerous illustrations, charts and tables. The climatological elements taken up in detail are atmospheric pressure, temperature, humidity, clouds, sunshine and haze, wind-surface and upper air, rainfall and evaporation. *Subject Headings:* **Climatology, Khartoum, Sudan.**

2J–98 551.524

Sutton, L. J., **Note on indoor temperatures in Cairo during the summer of 1922.** *Royal Meteorological Society, Quarterly Journal*, 49:277–278, **1923.** **DWB**—Author briefly reports results of the record he kept of maximum and minimum temperatures indoors in Cairo, July to Oct. 1922. *Subject Headings:* **Microclimatology, Indoor temperatures, Cairo, Egypt.**

1924

2J–99 551.521.11

*Knox-Shaw, Harold, **Observations of duration of sunshine in Egypt and the errors of an old type of recorder.** *Egypt, Physical Dept. Paper* No. 15:1–4, **1924.** photo, diagram, 3 tables, ref. **NNA**—Comparison made of two sunshine recording instruments, one by ELLIOTT, the other, a more modern pattern by HICKS, by examining their respective records. Old sunshine data and curves are given with newer corrections. *Subject Headings:* **Sunshine duration, Instrumental errors, Egypt.**

2J–100 551.577 551.579

*Phillips, Percy, **The discharges and levels of the Nile and rains of the Nile Basin in 1919.** *Egypt, Physical Dept. Paper* No. 11, **1924.** 84 p. map and 3 diagrs. attached, 14 tables. **NNA**—This report is practically a revival of earlier reports on "Rains of the Nile Basin" up to 1912. (*See item* 2J–75 above.) Similarly, rainfall and river gauge statistics are given, and in addition lists of the river discharges measured at a station north and all stations south of Aswan. Tables of five-day mean, monthly mean and monthly total discharges are given. Chapter 3 deals with rainfall data received from numerous sources. *Subject Headings:* **Precipitation, Runoff, Nile Basin, Northeast Africa.**

2J–101 551.506.3(62)

*Range, Paul, **Über neuere meteorologische Beobachtungen auf der Sinaihalbinsel.** [New meteorological observations from the Sinai Peninsula.] *Meteorologische Zeitschrift*, 41:79–81, **1924.** 2 tables, ref. **DWB**—Rain and temperature values for each month are summarized in tables for different cities for different periods from 1886 to 1920. *Subject Headings:* **Observational data, Precipitation, Temperature, Long period records, Sinai Peninsula, Egypt.**

2J–102 551.557

Sutton, L. J., **Low velocities in the upper air.** *Meteorological Magazine*, London, 59:86, 1924. ref. **DWB**—Instances are cited when very low velocities of winds in the upper air were recorded at Helwân, 1921, 1922. *Subject Headings:* **Upper air winds, Helwân, Egypt.**

2J–103 551.586:633.51

*Williams, C. B., **Cotton growing in relation to climate in Egypt and the Sudan.** *Egypt, Ministry of Agriculture, Technical and Scientific Service, Bulletin*, No. 47, **1924.** 31 p. 9 plates, 9 tables, refs. **NNA**—A method is devised by the author to show how the relation of the cotton plant to temperature and rainfall in the different cotton-growing parts of the world can be studied by means of a diagram representing vertically the temperature, or rainfall, and horizontally the stages in the growth of the plant. The method is applied to a study of the variety of climatic conditions under which cotton is grown in Egypt and the Sudan, particularly with reference to those changes that

occur as one goes up the Nile. Meteorological tables are given for different places, Alexandria up to Khartoum, Wad Medani, and Kassala. List of publications in English issued by the Ministry of Agriculture, included. *Subject Headings:* **Agricultural climatology, Cotton, Egypt, Sudan.**

2J–104 551.586

*Williams, C. B., **A short bioclimatic study in the Egyptian desert.** *And:* **Bioclimatic observations in the Egyptian desert in March 1923.** And: **A third bioclimatic study in the Egyptian desert.** *Egypt, Ministry of Agriculture, Technical and Scientific Service, Bulletin*, Nos. 29, 37, and 50, 1923, 1924. 20 p. 18 p. 32 p. figs., tables. **NNA**—Bulletin No. 29 gives report of a week's expedition in to the desert southeast of Cairo in Aug. 1922, to study bioclimatic conditions and their local variations which appear to be great. No. 37 outlines conditions of temperature, humidity, and evaporation and other climatic conditions significant to bioclimatic study in the same area, March 1923. No. 50 gives the results of observations in Dec. 1923 and the general summary and comparison of the results of the three reports. *Subject Headings:* **Bioclimatology, Egypt.**

1925

2J–105 551.582(635)

*Eredia, Filippo, **Sul clima continentale delle valli e pendici del versante sudanico dell'Eritrea. I. Chenafenâ.** [On the continental climate of the valleys and hill sides of the Sudan slope of Eritrea. I. Chenafenâ.] *Italy, Ministero Delle Colonie, Bollettino di Informazioni Economiche*, No. 5, 1925. 15 p. tables, 13 refs. Extract. **NNA**—Temperature, cloud, humidity, precipitation, thunderstorms and evaporation are discussed and brief tables given by months for 1903–1907. *Subject Headings:* **Climatology, Eritrea.**

2J–106 551.524.3

*Grodzicki, Ludwik, **O wahaniach temperatury w Egipcie w latach 1910–1919.** [On the variations of temperature observed in Egypt in the years 1910–1919.] *Kosmos*, 50(4):1128–1165, 1925. 6 figs., 24 tables. In Polish, French summary. **NNA.** Also in: *Institut de Géophysique et de Météorologie de l'Université de Lwów, Communications*, No. 18:1128–1165, 1925. In Polish. **NNA**—Variations of temperature, due to location and general atmospheric circulation, are briefly discussed and values are tabulated. Some relations to other meteorological factors and climate variations in other regions are pointed out. *Subject Headings:* **Temperature variations, Egypt.**

2J–107 551.582(62)

†*Hamed, Mahmoud, **The climate of Alexandria.** *Egypt, Physical Dept. Paper* No. 19, 1925. 62 p. 7 plates, 38 tables, 115 refs. **NNA**—After an introduction which briefly reviews the history of climatological observations in Alexandria, climatic elements are discussed separately: pressure, temperature, humidity, cloud and sunshine, wind and state of sea, rainfall and evaporation. Extensive tables give values for these elements for as many as 34 years. *Subject Headings:* **Climatology, Alexandria, Egypt.**

2J–108 551.513:551.524.7

Newnham, E., **Upper air temperatures in Egypt.** *Great Britain, Meteorological Office, Professional Notes*, 4(41), 1925. 7 p. 4 tables. **NNA**—As a result of observations made at Ismalia, 70 mi. NE of Cairo, by Royal Air Force, and at Helwân, 1922–1924, author claims that important additions to knowledge of general circulation of atmosphere are attained. Tables give mean values of upper air temperatures corresponding with various pressures, temperature ranges, vertical gradients and mean relative humidities. *Subject Headings:* **Upper air temperatures, Atmospheric circulation, Egypt.**

2J–109 551.555.8

Sutton, L. J., **Haboobs.** *Royal Meteorological Society, Quarterly Journal*, 51:25–30, 1925. **DWB**—Paper is based on J. T. Hirst's observations, 1916–1923, made at Khartoum. Direction of approach, duration, wind velocity, dust amounts, appearance, temperature and pressure conditions, etc. of haboobs are described. (*Same item* as No. 2G–122 in July 1951 *Meteorological Abstracts.*) *Subject Headings:* **Haboobs, Khartoum, Sudan.**

2J–110 551.557

†*§Sutton, L. J., **The upper currents of the atmosphere in Egypt and the Sudan.** *Egypt, Physical Dept. Paper* No. 17, 1925. 136 p. numerous plates, 39 tables, 115 refs. **NNA**—Detailed and extensive work presents a summary of most available observations of motion in upper strata of atmosphere over Egypt and Sudan. For Egypt the objective is to find mean values of the wind velocity and direction at various heights and to associate these values, where possible, with recognized

types of pressure distribution at the surface. This method is considered inapplicable to the Sudan due to paucity of observations at that time. Chapters take up: apparatus and methods; types of weather in Egypt; observations at (respectively) Helwân, Aswan, Wadi Halfa, Khartoum, Mongala, Roseires, and Lake Tana (Abyssinia). Synoptic charts illustrate types of pressure distribution and weather in Egypt. Charts illustrate velocities, directions, frequencies of upper air winds. Some rainfall maps are included. *Subject Headings:* **Upper air winds, Egypt, Sudan.**

1926

2J–111 551.506.1(677.3)

*Italy. Istituto Idrografico della Regia Marina (Prepared by D. Omodei), . . . **Osservazioni meteorologiche ed idrometriche eseguite 1923 nelle Stazioni Istituite nella Somalia Italiana da S.A.R. il Duca degli Abruzzi.** [Meteorological and hydrometrical observations made in 1923 by the station of the Institute of Italian Somaliland S. A. R. in Duca degli Abruzzi.] Rome, **1926.** 107 p. 3 maps, chart, extensive tables. **NN**—Extensive detailed observations for six meteorological stations in Italian Somaliland for each month in 1923 are tabulated and discussed. *Also:* **Osservazioni meteorologiche . . . 1922 . . .** by D. Omodei and F. Eredia. Reprint from *Annali Idrografici, Supplement*, Vol. 10, 1915–1922. 81 p. map, extensive tables. **DWB**—*Subject Headings:* **Climatic data, Italian Somaliland.**

2J–112 551.582.1(62)

†*Sutton, L. J., **The climate of Helwan.** *Egypt, Physical Dept. Paper* No. 20, **1926.** 82 p. 13 plates, 37 tables, 115 refs. **NNA**—Report deals in detail with meteorological observations for 1906–1920; all available observations are included. Chapters include: general description of the climate, atmospheric pressure, temperature, humidity, cloud and sunshine, wind, precipitation and evaporation. Includes lists of publications of, or by Physical Dept. on meteorology, hydrology, etc. *Subject Headings:* **Climatology, Helwân, Egypt.**

2J–113 551.586:63

Wardle, R. A., **The climate of the southern Sudan in relation to cotton growing.** *Manchester Literary and Philosophical Society, Memoirs and Proceedings*, 70:59–69, 1925–**1926.** 3 figs., 2 refs. Reprint available. **NNA**—Climate is discussed with a view toward cultivation of American Upland cotton. Map shows mean annual isohyets. Rainfall and temperature curves for cotton growing centers in U.S.A. and Uganda and curves of mean monthly rainfall from May to Oct. in Sudan are sketched. *Subject Headings:* **Agricultural climatology, Cotton, Sudan, Uganda.**

1927

2J–114 551.582(677.3)

Eredia, Filippo, **Sui carateri climatologici della Somalia Italiana Meridionale.** [Climatological characteristics of Southern Italian Somaliland.] Genoa, **1927.** map, 5 figs., 6 tables. **DWB**—Climatological data for 1922–1925 for some 8 to 12 stations in region are briefly summarized in tables and discussed. Figures are climographs for Mogadiscio, Bulo Burti, Villaggio Duca Abruzzi and Iscia Baidoa. Annual variation of aridity index is charted. *Subject Headings:* **Climatology, Italian Somaliland.**

2J–115 551.579

Hurst, Harold Edwin, **The lake plateau basin of the Nile.** *Egypt, Physical Dept. Papers* Nos. 21, 23, 1925, **1927.** 75 p. 66 p. figs., tables. **NN**—Account given of two journeys: one dealing with the northern part of the Lake Plateau Basin of the Nile; the other, with the Kagera River and rivers flowing into the south end of Lake Edward. Trips were made to study the hydrological aspects of these regions. Contents include: description of routes, countries, topography, etc.; and hydrology, under which in Paper No. 21 only are included: meteorological aspects, rainfall, runoff, evaporation, as well as lake levels, discharges, etc. Paper No. 23 deals solely with the hydrological aspects of the region. *Subject Headings:* **Hydrology, Climatology, Nile Basin, Northeast Africa.**

1928

2J–116 551.579.4

*Brooks, C. E. P., **Periodicities in the Nile floods.** *Royal Meteorological Society, Memoirs*, 2(12):9–26, **1928.** 3 figs., 4 tables, refs., equations. **NN**—Author investigates periodicity by using a periodogram method to analyze a set of Nile flood records for 641–1451. *Subject Headings:* **Periodicities, Nile floods.**

2J–117 551.515.8(62)

§Durward, J., **Pressure, temperature and wind variations at Heliopolis, Egypt, associated with the warm and cold sectors of a depression.** *Meteorological Magazine*, London, 63:57–61, **192.8**

3 figs. **DWB**—A short account is given of a situation in which rather striking oscillations of wind, temperature, humidity and pressure occurred at Heliopolis and other stations in Egypt, Feb. 1 and 2, 1928, in a warm sector and behind a cold front. Figures show instrumental records and a synoptic chart. *Subject Headings:* **Air masses, Synoptic analysis, Egypt.**

2J–118 551.513.7

*Groissmayr, Fritz Béla, **Beziehungen zwischen den Luftdruck-, Zirkulations-, und Temperaturverhältnissen auf der Nordhemisphäre und den Nilfluten.** [Relations between atmospheric pressure, circulation, and temperature conditions of the Northern Hemisphere and the Nile floods.] *Annalen der Hydrographie und Maritimen Meteorologie*, 56:6–14, **1928.** 6 tables, refs. **DWB**—In the light of long-period observations the occurrence of the Nile flood is studied in relation to various large scale weather phenomena of the Northern Hemisphere occurring before, simultaneously, and succeeding the flood. In the resumé, the flood is found in negative correlation with: preceding Jan. pressure at Iceland, May pressure in Bombay and winter temperatures in Siberia; with the succeeding winter pressure of the Azores, and winter temperatures of west and central Eurasia. The flood is found in positive correlation with: preceding May pressure in Argentina; the simultaneous monsoon rains of East India; and the succeeding winter pressure of Iceland. These causal relations have prognostic significance; they lead to the speculation that balancing forces exist between N. Indian Ocean circulation in summer and that of the North Atlantic in following winter, the author says. *Subject Headings:* **Atmospheric circulation, Atmospheric pressure, Temperature, Correlations, Nile floods, Northern Hemisphere.**

2J–119 551.506.1(635)

***Riassunto delle osservazioni meteorologiche compiute nell'Eritrea durante il 1927.** [Summary of meteorological observations computed in Eritrea during 1927.] *Rassegna Economica delle Colonie*, 16:878–881, Sept.–Oct. **1928.** tables. **NNA**—Temperature and precipitation data for 1927 appear in tables by month for Asmara, Cheren, Massaua, and Gheleb. *Subject Headings:* **Temperature, Precipitation, Climatic data, Eritrea.**

2J–120 551.582.1(62)

Schacht, E., **Klimatisches von Ägypten.** [Climates of Egypt.] *Zeitschrift für angewandte Meteorologie*, 45:2–7, **1928. NN**—General descriptive account of climates of various regions of Egypt with no data. *Subject Headings:* **Climatology, Egypt.**

2J–121 551.577

†Schmidt, Hellmut, **Der jährliche Gang der Niederschläge in Afrika.** [The annual conditions of precipitation in Africa.] *Aus dem Archiv der Deutschen Seewarte, Hamburg*, 46(1), **1928.** 45 p. 7 maps, 5 plates, 2 tables, 74 refs. **NN**—Northeast African rainfall included in overall consideration of rainfall of Africa, illustrated by maps, charts, tables, etc. *Subject Headings:* **Precipitation, Northeast Africa.**

1929

2J–122 551.551:629.13

Durward, J., **Bumpiness on the Cairo-Basra air route.** *Great Britain, Meteorological Office, Professional Notes*, No. 52, **1929.** 6 p. fig., table. **DWB**—Bumpiness (turbulence) is tabulated and discussed briefly for the section of the route from Cairo to Gaza, as well as for the other sections of the route to Bagdad and Basra. (*See item* No. 2F–80 in June 1951 *Meteorological Abstracts.*) *Subject Headings:* **Aeronautical climatology, Turbulence, Cairo-Gaza air route, Egypt, Iraq.**

2J–123 551.577.2(635)

Eredia, Filippo, **Le precipitazioni acquee nella colonia Eritrea.** [Rainfall in the colony Eritrea.] *Rivista della Colonie Italiane*, 3(2):133–138, Feb. **1929.** 7 refs. **NNA**—Author describes climate of Eritrea and divides regions according to temperature, altitude and principally, by amount of precipitation. *Subject Headings:* **Precipitation distribution, Eritrea.**

2J–124 551.582(63)

Sander, Erich, **Erscheinungen des Luftkreises.** [Atmospheric phenomena.] (In author's **Das Hochland von Abessinien Habesch; eine länderkundliche Monographie.** [The highland of Abyssinia; a geographical monograph.] Heidelberg, **1929.** p. 22–36. 19 tables.) **NNA**—Descriptive account given of climatic elements of wind, rainfall, floods, temperature, and cloud and sunlight conditions accompanied by brief summary tables. *Subject Headings:* **Climatology, Ethiopia.**

1930

2J–125 551.577:58

Chipp, T. F., **Forests and plants of the Anglo-Egyptian Sudan.** *Geographical Journal*, London, 75(2):123–143, Feb. **1930. DLC, NNA**—Chart (p. 128) shows mean annual rainfall of the Sudan, 1905–1909, with isotherms. Rest of article is principally a description of plant life with only slight reference to climatic elements. No data included. *Subject Headings:* **Precipitation, Botany, Sudan.**

2J–126 551.515.8(62,624)

§Flower, William Dennis, **A note on the influx of cold air into Egypt and Northern Sudan from 18 to 23 April 1930.** *Royal Meteorological Society, Quarterly Journal*, 66:216–222, **1930.** 5 figs., table, ref. **DWB**—A synoptic analysis is made of conditions during this period when two depressions of khamsin type passed over Lower Egypt and Palestine; pressure in center of first was abnormally low for the time of year in region; movement of cold air into Egypt is considered. *Subject Headings:* **Air masses, Synoptic analysis, Khamsin, Egypt, Sudan.**

2J–127 551.582(63,624,677.2)

*Selianinov, G., **Agroklimaticheskie zony Abissinii Eritreii prilegaiushchikh chastei Sudana i Somali.** [Agroclimatological zones of Abyssinia, Eritrea and the adjoining parts of Sudan and Somaliland.] *Trudy po Prikladnoĭ Botanike, Genetike i Selektsii*, 22(5):489–522, 1929–**1930.** 3 figs., map, tables, refs. **NNA**—*Subject Headings:* **Agricultural climatology, Ethiopia, Eritrea, Sudan, Somaliland.**

2J–128 551.557

†*Sutton, L. J., **Upper winds at Cairo and Khartoum.** *Egypt, Physical Dept. Paper* No. 27, **1930.** 52 p. 4 plates, numerous tables, refs. **NNA**—Results of 2600 pilot balloon observations 1920–1928, are presented as monthly frequency tables of direction and speed, for altitude intervals of 500 meters; observations included for 5000 and 10,000 meters. Direction of resultant wind at each altitude, as obtained from the total direction frequencies, without respect of velocity, is tabulated. Lists of Physical Dept. publications included. *Subject Headings:* **Upper air winds, Cairo, Egypt, Khartoum, Sudan.**

1931

2J–129 551.524

Durward, J., **A comparison of temperatures inside and outside the meteorological enclosure at the Airship Base, Ismailia, Egypt.** *Great Britain, Meteorological Office, Professional Notes*, No. 61, **1931.** 5 p. fig., table, 2 refs. **NNA**—Brief account is given of tests of thermometers at Ismailia to determine effects of instrument enclosure, which is necessary because of shifting sands. Differences inside and outside are tabulated. *Subject Headings:* **Temperature, Instrument shelters, Ismailia, Egypt.**

2J–130 551.577.37

Durward, J., **Floods in Arabia and the western desert of Egypt.** *Meteorological Magazine*, London, 66:64–65, **1931. DWB**—Brief synoptic analysis and description of heavy rain in region are given. *Subject Headings:* **Precipitation, Floods, Egypt, Arabia.**

2J–131 551.582.3(62)

§Egypt. Physical Dept., **Meteorological atlas of Egypt.** Giza, **1931.** 15 p. 41 plates, table. **NNA**—This work, prepared for presentation at the International Geographical Congress, Paris, 1931, gives an excellent graphic presentation of the climate of Egypt and the Sudan. Information on which maps, diagrams and text of the atlas are based consists mainly of observations from numerous stations in Egypt and the Sudan for 25 to 30 years and some for shorter periods. Distribution of stations are shown on a map. Climatological normals on a regional basis are given in table. Each climatological element is discussed separately and illustrated in respective plates. Insets of the maps give further meteorological descriptions of the Nile Basin. Various weather types are shown by typical synoptic charts. Paths of depressions are plotted for each month (1930). Diagrams show curves of climatic elements for different places. Climographs and upper air wind roses are included. *Subject Headings:* **Climatology, Atlases, Egypt.**

2J–132 551.515.8(62)

§Flower, William Dennis, **An analysis of the cold front over Egypt on March 7, 1929.** *Royal Meteorological Society, Quarterly Journal*, 57:275–287, **1931.** 6 figs., ref., 3 equations. **DWB**—Author states that at Ismailia, Egypt, there exists a meteorological set-up which permits a detailed examination of structure of certain atmospheric discontinuities. Autographic records for wind

emperature, humidity and pressure at Heliopolis and Ismailia, together with records of vertical emperature gradient at the latter station are considered in detail for such an examination of a cold ront, March, 1929, associated with a depression over lower Egypt. *Subject Headings:* **Synoptic nalysis, Cold fronts, Egypt.**

2J–133 551.579

†*Hurst, Harold Edwin and Phillips, Percy, **The Nile Basin.** *Egypt, Physical Dept. Papers* No. 6, 28–38, **1931–1943.** **NNA**—Paper No. 26 (114 p. 114 plates, 13 tables) has an extensive bibliography in two parts: one on topography, hydrology, vegetation and general matters relating to the Nile Basin, and the other on meteorology. In this paper (Vol. I), Chap. 3 (p. 23–63) deals with meteorology, including: general considerations; pressure distribution and circulation of air at the surface and of upper air; temperature; humidity; clouds and sunshine; rainfall; evaporation; changes of climate; and effect of climatic conditions on animal and vegetable life. Succeeding numbers (28–38) deal with hydrology, discharges, gage readings, and water levels of the Nile, its tributaries and the Lake Plateau of Bahr El Gebel. (*See item* 2J–95 above, 2J–210 below.) *Subject Headings:* **Climatology, Hydrology, Nile Basin, Northeast Africa.**

2J–134 551.583.3:551.481

Nilsson, Erik Ejnar, **Quaternary glaciations and pluvial lakes in British East Africa.** *Geografiska Annaler*, 13:249–348, **1931.** 4 plates. **DLC**—Although article deals mainly with British East Africa, variations of Lake Tana, Ethiopia, are discussed and compared with Fayum Lakes and Nile terraces. Author considers evidence strong that climatic changes were contemporaneous over whole area. (For full abstract *see item* No. G–86 in July 1950 *Meteorological Abstracts.*) *Subject Headings:* **Climatic changes, Quaternary climates, Ethiopia, East Africa.**

2J–135 551.577.37

Sutton, L. J., **Exceptional rain in the Libyan Desert.** *Meteorological Magazine*, London, 66:29–31, March **1931.** **DWB**—Brief descriptive account of rainstorms of remarkable severity, Dec. 28–30, 1930, in the Libyan Desert of Egypt. *Subject Headings:* **Rainstorms, Libyan Desert, Egypt.**

2J–136 551.555.8(624)

*§Sutton, L. J., **Haboobs.** *Royal Meteorological Society, Quarterly Journal*, 57:143–161, **1931.** figs., table, ref. **DWB**—Complete records of haboobs at Khartoum, 1916–1929, are summarized; accompanying meteorological and physical conditions are discussed as in *item* 2J–109, although more completely. Some incomplete records for Kassala are also considered; some conclusions are drawn on distribution, characteristics, and some of the synoptic conditions of haboobs in the Sudan. *Subject Headings:* **Haboobs, Khartoum, Kassala, Sudan.**

1932

2J–137 551.582(62,53)

†*Brooks, Charles Ernest P., **Le climat du Sahara et de l'Arabie.** [The climate of the Sahara and of Arabia.] Paris, **1932.** p. 27–105. 15 figs., 11 tables, refs. Introduction by Masauji Hachisuka, p. 1–23. **NNA**—Deserts in general are defined, then particular features of the Sahara and of Arabia are discussed: barometric pressure and winds (with maps showing seasonal wind directions and isobars); storms and disturbances, dust devils, haboobs, harmattan, etc.; rainfall, clouds; temperature means, diurnal and annual variations, distribution, etc.; humidity, visibility, mirages, dew; geologic climatic changes and those during historic times. *Subject Headings:* **Climatology, Climatic changes, Sahara, Egypt, Arabia.**

2J–138 551.513

Brooks, Charles Ernest P. and Mirrlees, S. T. A., **A study of the atmospheric circulation over Tropical Africa.** *Great Britain, Meteorological Office, Geophysical Memoirs*, No. 55, **1932.** 10 p. 8 figs., 2 tables, 5 refs. **NN**—Study made for different seasons. Contents include consideration of pressure data, wind data, annual average pressure at mean sea level and at 1000 dynamic meters, pressure and winds in Jan., April, July and Oct., and the winds of each period in relation to corresponding rainfall. Conclusions drawn differ from former ideas. Almost complete lack of upper air data is recognized by the authors as a handicap. *Subject Headings:* **Atmospheric circulation, Tropical Africa.**

2J–139 551.577.2(635)

*Eredia, Filippo, **Le precipitazioni acquee nell'Eritrea dal 1923 al 1931.** [Rainfall in Eritrea from 1923 to 1931.] *Annali dei Lavori Pubblici*, 70(9):772–——, Sept. **1932.** 5 figs., 5 tables, refs. **DLC.** Reprint available. **NNA**—Climatic regions and rainfall areas of Eritrea are noted and summary tables of rainfall values for different places, given. *Subject Headings:* **Precipitation distribution, Eritrea.**

2J–140 551.524:551.577

*Eredia, Filippo, **Sulla temperatura del 'aria e sulle precipitazioni acquee di Asmara.** [On air temperatures and rainfall of Asmara.] *Rassegna Economica delle Colonie*, 10, July–Aug. **1932.** Reprint available. 14 p. tables, 4 refs. **NNA**—A few previous works on subject are noted and some summary tables of temperature and rainfall values are given, covering a period 1890–1930. *Subject Headings:* **Temperature, Precipitation, Climatic data, Asmara, Eritrea.**

2J–141 551.5:016

†Fàntoli, Amilcare (*ed.*), **Bibliografia meteorologica delle colonie italiane e delle isole italiane dell'Egio.** [Meteorological bibliography of the Italian colonies and of the Italian islands of the Aegean.] *Rassegna Economica delle Colonie*, 20:779–792, July–Aug. **1932.** extensive refs. **NNA**—Extensive bibliography gives numerous references alphabetically arranged for each Italian colony and a few for the bordering regions: Egypt, Libya, Tunisia, Sahara, Algeria, Red Sea, Abyssinia, etc. Included are separate lists for Tripolitania, Cirenaica, Eritrea, and Italian Somaliland, and the Italian islands of the Aegean Sea. *Subject Headings:* **Meteorology, Bibliographies, Eritrea, Italian Somaliland, Tripolitania, Cirenaica, Italian islands of Aegean.**

2J–142 551.586:612

*Lahmeyer, Friedrich and Dorno, Carl W. M., **Assuan; eine meteorologisch-physikalisch-physiologische Studie.** [Aswan; a meteorological-physical-physiological study.] Braunschweig, **1932.** 68 p. 11 figs., 49 tables, refs. **NNA**—After an introduction reviewing some of the earlier works on relations between climate and health in Egypt, the author discusses in detail and gives tables of meteorological observations at Aswan: pressure, temperature, etc., saturation deficit, evaporation, sunshine, ultraviolet radiation, dust and atmospheric electricity. Physiological considerations of climate are then taken up: water and heat loss of respiratory system and of skin; similarities to other climates, meteorologically and physiologically; climate classification from a physiological point of view; mechanical, photochemical, electrical, physiological, and physical effects of climate. *Subject Headings:* **Climatology, Medical meteorology, Aswan, Egypt.**

2J–143 551.506.7(62)

*Peters, Sidney Percival, **Some upper-air observations over lower Egypt with special reference to the diurnal variation of temperature and humidity.** *Great Britain, Meteorological Office, Geophysical Memoirs*, No. 56, **1932.** 44 p. map, 7 figs., 44 tables, 12 refs. **DWB**—Results are presented of upper air temperature and humidity observations over Lower Egypt, Aug.–Oct. 1925 and March–July 1926. Included are sections on places and methods of observations; mean values of temperature and relative humidity; mean lapse rates; upper wind; extreme temperatures and lapse rates; study of ascents on individual days; haze tops; bumpiness; tables of each day's ascents; and diagrams giving graphical representation of temperatures recorded during ascent on each flight. *Subject Headings:* **Upper air data, Egypt.**

1933

2J–144 551.506.1(612,614,635,677.3)(05)

*Italy. Ministero delle Colonie, **Bollettino Meteorologico delle Colonie Italiane.** Vols. 13, 14. Tripoli, 1932, **1933.** extensive tables. **NNA, NN**—Daily observations of climatological elements made at numerous meteorological stations in Tripolitania, Cirenaica, Eritrea, and Italian Somaliland are tabulated at length for each year. *Subject Headings:* **Observational data, Tripolitania, Cirenaica, Eritrea, Italian Somaliland.**

1934

2J–145 551.55

Brooks, Charles Ernest P. and Durst, C. S., **The winds of Berbera; discussion of observations.** *Great Britain, Meteorological Office, Professional Notes*, 5(65), **1934.** 13 p. 8 figs., 4 tables, 3 refs. **NNA-DWB**—Wind regime at Berbera is noted as a result of a series of anemograph and pilot-balloon observations of land and sea winds for 1931–1933. Wind roses and anemograms are drawn for various heights of measurement, surface to 20,000 feet. Variations are discussed and inferences made to the thermal structure of the monsoons at Berbera. The circulation during the N.E. monsoon is found simple; that during the S.W. monsoon is discussed in *item* 2J–148 below. *Subject Headings:* **Winds, Upper air winds, Monsoons, Berbera, British Somaliland.**

2J–146 551.506.7(677.3

*Eredia, Filippo, **Le osservazioni aerologische al Capo Guardafui.** [Aerological observations at Cape Guardafui.] *Beiträge zur Physik der freien Atmosphäre*, 21(3):193–207, **1934.** tables, refs. **DLC, NN**—Results of pilot balloon soundings over Cape Guardafui in 1930–1933 are summarized

Wind direction frequencies by month at different altitudes are tabulated; seasonal frequencies shown. Particular conditions are shown by individual cases and illustrated in tables. *Subject Headings:* **Upper air data, Cape Guardafui, Italian Somaliland.**

1935

2J–147 551.521.1:551.501.9

*Abbot, C. G., **Mount Saint Katherine, an excellent solar-radiation station.** *Smithsonian Miscellaneous Collection*, 94(12), **1935.** 11 p. figs., photos, 4 tables, 3 refs. **NNA, DLC**—Author reports close agreement between solar radiation measurements obtained at Mount St. Katherine and those obtained on the same days at Montezuma, Chile. As well as presenting data from both stations, he gives a brief account of the founding and operating of the Egyptian station. *Subject Headings:* **Solar radiation, Observatories, Egypt.**

2J–148 551.513

Brooks, Charles Ernest P. and Durst, C. S., **The circulation of air by day and night during the south-west monsoon near Berbera, Somaliland.** *Royal Meteorological Society, Quarterly Journal*, 61:167–177, **1935.** 4 figs., 4 tables, 2 refs. **NN**—Circulation during the southwest monsoon, June–Aug., cannot be accounted for by ordinary mechanism of land and sea breezes. Steps are outlined in seeking for an explanation and a theory is evolved. *Subject Headings:* **Atmospheric circulation, Monsoons, Berbera, British Somaliland.**

2J–149 551.577:633.51

*Crowther, E. M. and Crowther, F., **Rainfall and cotton yields in the Sudan Gezira.** *Royal Society of London, Proceedings, Ser. B*, 118:343–370, **1935.** 3 figs., 7 tables, 15 refs. **DLC.** Summary in *The Empire Cotton Growing Review*, 13:110–119, April 1936. 5 tables, 2 refs. **NNA**—Relations between seasonal yield and weather fluctuations for cotton grown under irrigation in the Sudan are analyzed in detail for periods up to 21 years, 1911–1931. *Subject Headings:* **Precipitation, Agricultural climatology, Cotton, Gezira, Sudan.**

2J–150 551.577

Derege di Donato, Guido, **Contributo alla conoscenza del regime pluviometrico nella Colonia Eritrea.** [Contribution to the knowledge of the rainfall regime in the colony of Eritrea.] *L'Agricoltura Coloniale*, 29(8):390–412, Aug. **1935.** 4 figs., tables, refs., 16 refs. appended. **NNA**—Climatic zones are shown in figure and representative rainfall data are tabulated briefly for various points in each zone. *Subject Headings:* **Climatology, Precipitation, Eritrea.**

2J–151 551.506

Eredia, Filippo, **Au sujet du régime des pluies et de la température en Ethiopie.** [On the subject of rainfall and temperature regimes in Ethiopia.] *La Météorologie*, 11:495–497, Nov. **1935. DWB**—Author claims to have made observations prior to those of SANSON (*see* 2J–155 below). Summarizes data for temperature, rainfall, humidity and winds at Addis Ababa and Addis Alem from Nov. 1901–May 1903. *Subject Headings:* **Climatic data, Ethiopia.**

2J–152 551.525

Meinardus, Wilhelm, **Bodentemperaturen in der Wüste bei Schelall, Oberägypten.** [Soil temperatures at the desert near Schelall, Upper Egypt.] *Gesellschaft der Wissenschaften zu Göttingen, Nachrichten, Math.-Physik. Klasse, Neue Folge*, 1:1–18, **1935. DLC**—The author analyzes the soil temperature conditions for sandy ground. The thermal conductivity of sandy ground is determined. (*Same item* as 2C–81 in March 1951 *Meteorological Abstracts.*) *Subject Headings:* **Soil temperatures, Thermal conductivity, Egypt.**—*N.T.Z.*

2J–153 551.582(63)

Réthly, Antal, **Abisszinia éghajlatáról.** [The climate of Abyssinia.] *A Földgömb*, 6(10):391–394, Dec. **1935.** 3 tables. In Turkish. Reprint available. **DWB**—*Subject Headings:* **Climatology, Ethiopia.**

2J–154 551.582(61)

Robinson, A. E., **Desiccation or destruction; notes on the increase of desert areas in the Nile Valley.** *Sudan Notes and Records*, 18, Pt. 1:119–130, **1935.** refs. **NNA**—It is pointed out that increases in desert areas in the Nile Valley are in many cases due to human neglect or destruction and not entirely caused by climatic changes. References to numerous studies of changes of civilization, agriculture, river level and climate are made in footnotes. *Subject Headings:* **Aridity, Climatic changes, Nile Basin, Northeast Africa.**

2J–155 551.524 551.577

Sanson, J., **Le régime des pluies et de la température en Ethiopie.** [The rainfall and temperature regimes of Ethiopia.] *La Météorologie*, No. 125:385–390, **1935.** 2 tables. **NN**—Monthly rainfall means are given along with brief discussion for Addis-Ababa, 1915–1928, and for Diredawa, 1927–1934. Temperature means and extremes by months and year are then tabulated briefly. *Subject Headings:* **Temperature, Precipitation, Addis-Ababa, Diredawa, Ethiopia.**

2J–156 551.586:63

*Troll, C., **Wüstensteppen und Nebeloasen im südnubischen Küstengebirge; Studien zur Vegetations- und Landschaftskunde der Tropen I.** [Desert steppes and fog oases in the southern Nubian coastal region; study of vegetation and agriculture of the tropics I.] *Gesellschaft für Erdkunde zu Berlin, Zeitschrift*, No. 7–8:241–281, Nov. **1935.** 36 figs., tables, refs. **NNA**—Vegetation and agricultural zones are correlated with climatic conditions in the region of Sudan near the coast. Meteorological tables for towns in the region are appended. *Subject Headings:* **Agricultural climatology, Sudan.**

2J–157 551.553

Veer of southerly winds with height in Egypt. *Meteorological Magazine*, London, 70:211–213, **1935.** 2 tables, ref. **DWB**—Brief table shows change of direction of southerly winds, surface to 500 ft., 500–1000 ft., at Ismailia and Heliopolis, 1934–1935; another gives veer of southerly and westerly winds of different speeds. Explanation sought. *Subject Headings:* **Wind variations, Egypt.**

2J–158 551.582.1(635)

Wien, K., **Klimatographische Witterungsschilderung Nr. 40. Eritrea. Witterungsverlauf im afrikanischen Wüsten- und Steppenklimagebiet am Roten Meer. Beobachtungstage 12, 14, 15, 23 Oktober und 16 Dezember 1933.** [Climatographic weather sketch No. 40. Eritrea. Climatic conditions on the African desert and steppe climate regions of the Red Sea. Observational days, Oct. 12, 14, 15, 23, and Dec. 16, 1933.] *Annalen der Hydrographie und Maritimen Meteorologie*, 63:287–289, **1935.** 6 photos. **NNA**—Detailed weather conditions are noted for Massaua, Asmara and Cheren, Eritrea on above mentioned days. *Subject Headings:* **Climatology, Eritrea.**

1936

2J–159 551.557

*Durward, J., **Upper winds at Wadi Halfa (Sudan).** *Great Britain, Meteorological Office, Professional Notes*, No. 72, **1936.** 11 p. 12 figs., 6 tables, 3 refs. **DWB**—A year's observations of upper air winds at Wadi Halfa are summarized in discussion and tables. *Subject Headings:* **Upper air winds, Wadi Halfa, Sudan.**

2J–160 551.553.6

Eredia, Filippo, **Le correnti aeree nel bacino imbrifero dello Uebi Scebeli.** [Aerial currents in the rainy basin of the Uebi Scebeli (Webbe Schibeli).] (*R.*) *Società Geografica Italiana, Bollettino*, Ser. 7, 1:400–403, **1936.** 2 figs., table. **NNA**—Wind directions and frequencies are discussed and monthly normals for 1922 and 1927 are tabulated for Mogadiscio, Villaggio Duca Abruzzi and Bulo Burti. *Subject Headings:* **Winds, Italian Somaliland.**

2J–161 551.524:551.577

*Eredia, Filippo, **Le régime des pluies et de la température dans la Somalie italienne.** [Rainfall and temperature regime in Italian Somaliland.] *La Météorologie*, **1936.** p. 63–66. 3 tables, 5 refs. **NN**—Mean values for rain and temperature for a period of several years are given for stations in Italian Somaliland. *Subject Headings:* **Temperature, Precipitation, Italian Somaliland.**

2J–162 551.582:016(63)

†Fântoli, Amilcare, **Bibliografia meteorologica e geofisica dell'Impero Etiopico, Eritrea et Somalia.** [Meteorological and geophysical bibliography of Ethiopia, Eritrea and Somaliland.] *Rassegna Economica delle Colonie*, 24(9–10):514–521, **1936.** 200+refs. **NNA**—Over 200 references on meteorology, hydrography, and geophysics in Italian East Africa are listed alphabetically. This source has not been exhausted in the present bibliography. *Subject Headings:* **Meteorology, Hydrography, Geophysics, Bibliographies, Ethiopia, Eritrea, Somaliland.**

2J–163 551.582.2(635)

Fântoli, Amilcare, **Note sul clima dell'A.O.I.** [Note on the climate of Italian East Africa.] *Revista delle Colonie*, 10:1142–1159, Oct. **1936.** 2 maps, 4 figs., tables. **NNA**—Ten climatic zones

re distinguished. Temperature, wind and precipitation conditions are discussed, accompanied by brief summary tables and maps showing temperature and precipitation distribution. *Subject Headings:* **Climatology, Eritrea.**

2J–164 551.515.3(62,569.4,567,569)

*Flower, William Dennis, **Sand devils.** *Great Britain, Meteorological Office, Professional Notes,* No. 71, **1936.** 16 p. fig., 13 tables, 12 refs. **DWB**—Reports of occurrence of sand devils, 1927–1932, in Egypt, Palestine, Trans-Jordan and Iraq are studied and conclusions are drawn as to rotation direction, time of occurrence in each region and conditions of formation. *Subject Headings:* **Dust devils, Egypt, Palestine, Trans-Jordan, Iraq.**

2J–165 551.586:637

†Gheriany, Mostafa Ghaleb el-, **Le climat de l'Égypte dans ses rapports avec la production et la qualité du lait; étude biogéographique.** [The climate of Egypt and its effects on the production and quality of milk; biogeographical study.] Alexandria, **1936.** 56 p. figs., tables, refs. **NN**—Effects of Egyptian climate on the production of milk are discussed. A section reviews the meteorological network and climatic regions as well as giving some brief summarized data on temperature and rainfall. Climatic effects on forage crops and beasts and on the quality of the milk, especially dust and temperature conditions, are discussed (22 refs. on climate, p. 31–32). *Subject Headings:* **Biometeorology, Dairying, Egypt.**

2J–166 551.582(677.3)

Italy. Istituto Idrografico, **Portolano della Somalia Italiana.** [Coast pilot for Italian Somaliland.] 1st ed. and Suppl. No. 1. Genoa, **1936.** 175+p. numerous figs., tables. Somalo-Swahili—Italian equivalents. **DHO**—In the section on meteorology and oceanography (p. 14–38, figs., 2 tables) there is a brief but analytical description of winds along the coasts of Arabia, the Gulf of Aden and Somaliland, followed by charts and a discussion of cloudiness, visibility and mean resultant winds for each 1° square of latitude and longitude in the area from 7°–15°N. and 50°–60°E. and similar charts on average ocean currents, state of sea and tidal action in that area. Seasons, air and water temperature, humidity, rain, cloudiness, fog, pressure and effect of monsoons on ocean currents follow. Finally, elaborate "current roses" are presented for each of the four seasons. *Subject Headings:* **Coast pilots, Marine climatology, Swahili language, Gulf of Aden, Somali coast, Indian Ocean.**—*M.R.*

2J–167 551.582(63)

Padoan, Luigi, **Regioni climatiche.** [Climatic regions.] (In his **L'Abissinia nella geografia dell'Africa Orientale.** [Abyssinia in the geography of East Africa.] Milan, **1936.** map p. 16.) **NNA**—Map in this small atlas shows climatic regions of East Africa. *Subject Headings:* **Climatology, Ethiopia.**

2J–168 551.582.1(63)

Radtke, Heinrich, **Klimatographische Witterungsschilderung Nr. 63. Abessinien. Witterungsverlauf in der grossen Regenzeit in Kobela/Djenda. Beobachtungstage: 26–29 July 1934.** [Climatographic weather sketch No. 63. Abyssinia. Weather conditions in the great rainy season in Kobela/Djenda.] And . . . **Nr. 64. Abessinien. Witterungsverlauf in der winterlichen Trockenzeit am Nordufer des Tanasees . . . Feb. 1935.** [No. 64. Abyssinia. Weather conditions in the winter dry season on the north shore of Lake Tana . . . Feb. 1935.] *Annalen der Hydrographie und Maritimen Meteorologie,* 64:222–225, **1936. NNA**—Hour by hour reports of weather conditions during these two three-day periods. *Subject Headings:* **Climatology, Ethiopia.**

2J–169 551.506.5(62)

Shaw, W. B. Kennedy, **An expedition in the southern Libyan Desert.** *Geographical Journal,* 87:193–217, **1936.** Append. 3, **Meteorology.** p. 214–216. **NNA**—Observations made on this expedition in winter, 1935, of cloud, wind and temperature, are reported in text although not tabulated. Brief note by L. J. SUTTON, is included which comments on the relations between winter weather and the depressions in the Sahara. *Subject Headings:* **Climatic data, Libyan Desert, Egypt.**

2J–170 551.583.14

Sutton, L. J., **Temperature trend . . . note on the annual values of temperature, pressure and rainfall.** *Royal Meteorological Society, Quarterly Journal,* 62:120–122, **1936.** fig., table, ref. **DWB**—A letter notes the general rise in temperature noticed in Egypt in recent years and attaches a pertinent extract from the introduction to "Climatological Normals for Egypt and the Sudan" (1934). *Subject Headings:* **Climatic variations, Egypt.**

2J–171 551.582(635)

†*Visentini, Marco, **Notizie idrografiche sull'Africa Orientale Italiana.** [Hydrographic notes on Italian East Africa.] Rome, **1936.** 77 p. numerous figs., tables, 102 refs. **DWB**—Deals primarily with hydrographic elements of the region including Eritrea, Italian Somaliland and Ethiopia, but includes as well some comprehensive climatological discussion, data and illustrations. *Subject Headings:* **Hydrography, Climatology, Eritrea.**

1937

2J–172 551.513

Eredia, Filippo, **Le osservazioni anemologiche eseguite nella Libia e nell'Impero Italiano in relazione alla circolazione atmosferica generale del continente African.** [Wind observations taken in Libya and the Italian Empire in relation to general atmospheric circulation of the African continent.] *Meteorologia Pratica*, 18(3), **1937.** 14 p. 4 figs., tables, 9 refs. Reprint available. **NN**—In addition to discussing the pressure distribution and atmospheric circulation of Africa in general, observations in Somaliland, Abyssinia and Eritrea are studied in particular in relation to the general distribution. *Subject Headings:* **Atmospheric circulation, Atmospheric pressure, Libya, Somaliland, Ethiopia, Eritrea, Africa.**

2J–173 551.582.2(635)

Eredia, Filippo, **Stato attuale delle conoscenze sul clima dell' A.O.I.** [Actual state of knowledge on the climate of Italian East Africa.] *Terzo congresso di Studi Coloniali, Atti*, 5:153–160, **1937. NNA**—History of climatological observations briefly reviewed up to the present, including set-up of stations and arrangements for keeping climatological records in the region. *Subject Headings:* **Climatology, Eritrea.**

2J–174 551.582.2(63)

*Fàntoli, Amilcare, **Note climatologiche su alcune stazioni dell'Africa Italiana.** [Climatological notes on some stations of Italian Africa.] *L'Agricoltura Coloniale*, 31(12):497–509, Dec. **1937.** fig., tables, **NNA**—Brief descriptive accounts and summarized data are given for Addis Ababa, Harar, Gimma, Gondar, Asmara, and Mogadiscio, in Italian East Africa. Figure shows rainfall distribution in region. *Subject Headings:* **Climatology, Eritrea, Ethiopia.**

2J–175 551.511:551.555.8

*Farquharson, J. S., **Haboobs and instability in the Sudan.** *Royal Meteorological Society, Quarterly Journal*, 63:393–414, July **1937.** 12 figs., 6 tables, 14 refs., equations. **DWB**—Dust storms of Sudan (haboobs) are shown associated with thundersqualls. Several haboobs are discussed with particular reference to upper winds and upper air temperatures, an indication of the speeds of the vertical currents associated with a haboob being obtained on one occasion by means of a series of pilot balloon observations in close sequence. Conditions associated with instability in Sudan are investigated; suggested that they may be referred to a discontinuity between SW monsoon and NE trade. (*Same item* as No. 2G–206 in July 1951 *Meteorological Abstracts.*) *Subject Headings:* **Haboobs, Thunderstorms, Synoptic analysis, Sudan.** *From author's summary.*

2J–176 551.524.4

*Flower, William Dennis, **An investigation into the variation of the lapse rate of temperature in the atmosphere near the ground at Ismailia, Egypt.** *Great Britain, Meteorological Office, Geophysical Memoirs*, No. 71, **1937.** 87 p. 41 figs., 27 tables, 28 refs., equations. **DWB**—Arrangements for determination of lapse rate variations in the lowest 61 meters of atmosphere at Ismailia are described, together with an account of the analysis of autographic records obtained 1931–1932. Continuous records kept; variations described, diurnal and annual. Relation between vertical gradient of wind velocity, wind velocity and lapse rate, treated. Growth and decay of nocturnal inversions is considered in detail. *Subject Headings:* **Vertical temperature gradient, Ismailia, Egypt.**

2J–177 551.571.4(62)

Flower, William Dennis, **Relative humidity above the desert at Ismailia, Egypt.** *Meteorological Magazine*, London, 72(*4*):69–70, April **1937.** 2 figs. **DWB**—Brief account, of two series of observations of relative humidity at heights of 4, 55, 154 ft. above the desert at Ismailia, 1932. *Subject Headings:* **Relative humidity, Ismailia, Egypt.**

2J–178 551.524.2 551.571.2(62)

Flower, William Dennis, **Temperature and relative humidity in the atmosphere over Lower Egypt.** *Great Britain, Meteorological Office, Professional Notes*, No. 75, **1937.** 12 p. 9 tables, 10 refs., equations. **DWB**—Author presents tables of mean values of temperature and relative humidity

compiled from early morning observations of temperature in the upper air, 1922–1930, at inland stations in Lower Egypt: Helwân, Heliopolis and Ismailia. *Subject Headings:* **Temperature distribution, Relative humidity distribution, Egypt.**

2J–179 551.582.2(63)

*Gamba, Pericle, **Nozioni sul clima d'Ethiopia.** [Notes on the climate of Ethiopia.] *Terzo Congresso di Studi Coloniali, Atti*, 8:442–430, **1937.** tables. **NNA**—Observations of temperature and of rainfall for Messina, Florence, Addis Ababa and Diredawa are tabulated for periods 1915–1917 and 1923–1928. *Subject Headings:* **Temperature, Precipitation, Climatic data, Ethiopia.**

2J–180 551.582.2:656.6(262)

*Great Britain. Hydrographic Office, **Mediterranean Pilot. Vol. V; comprising the coasts of Libya, Egypt, Palestine, and Syria; the southern coast of Turkey, and the island of Cyprus.** 3rd ed. London, **1937. DLC**—Pages 8–23 deal with pressure and winds in general and climatic elements in the various regions. Meteorological tables, p. 188–196. *Subject Headings:* **Marine climatology, Climatic data, Libya, Egypt, Palestine, Syria, Turkey, Cyprus, Mediterranean Region.**

2J–181 551.557

*Great Britain. Meteorological Office, **Monthly normals of percentage frequencies of surface and upper winds over Malta, Egypt, Palestine, Trans-Jordan, and Iraq, mainly between the years 1921 and 1932.** London, **1937.** 49 p. extensive tables. (M.O. 405.) **DWB, NN**—Tables give monthly summaries of percentage frequencies of winds of various speeds and directions at the surface and at selected heights in the upper air, as observed in these countries. *Subject Headings:* **Winds, Upper air winds, Climatic data, Malta, Egypt, Palestine, Trans-Jordan, Iraq.**

2J–182 551.506.2(677.2)

***Meteorological observations in the South Atlantic, at Ocean Island and in British Somaliland during the second international polar year, 1932–3.** *Great Britain, Meteorological Office, Geophysical Memoirs*, 9(73), **1937.** 63 p. extensive tables. **NNA**—Pages 50–63 contain detailed meteorological tables for Berbera, British Somaliland, for each month from Aug. 1932 to Aug. 1933. Elements recorded and tabulated for three different times of day are: pressure, temperature, relative humidity, rainfall, sunshine, wind-direction, force, mean speed, maximum gust, visibility—landwards and seawards, cloud form and amount, and "weather." The anemograms are not reproduced here, but discussion of results for period May 1931–April 1933 appear elsewhere. (*See item* 2J–145 above.) *Subject Headings:* **Observational data, British Somaliland, Berbera.**

2J–183 551.5:06:629.13

Morsellino, N. A., **L'organizzazione meteorologica dell'aeronautica dell'Africa Orientale.** [The meteorological organization of aeronautics in Italian East Africa.] *Rivista di Meteorologia Aeronautica*, 1(2):31–34, Oct. **1937.** map. **DLC**—An account is given of the formation in 1936 of an organized meteorological service for aeronautics in Italian East Africa. A map of meteorological stations, classified according to types of observations recorded, is included. *Subject Headings:* **Meteorological services, Aeronautical meteorology, Eritrea.**—*M.P.K.*

1938

2J–184 551.582(635)

Fântoli, Amilcare, **Primi accertamenti meteorologici in A.O.I. (1937).** [Fundamental meteorological factors in Italian East Africa (1937).] *Annali dell'Africa Italiana*, 1(3–4):1227–1239, **1938.** map, table. Reprint available. **DWB**—Climatic elements are described for the various sections of the region, and brief fragmentary data are given. Map shows climatic zones. *Subject Headings:* **Climatology, Eritrea.**

2J–185 551.506.1(63,635,677.3)

*Italian East Africa. Servizio Meteorologico, **Sommario delle osservazioni meteorologiche e pluviometriche.** [Summary of meteorological and rainfall observations.] Rome [**1938**]. 149 p. extensive tables. **DWB**—Work consists entirely of tables which summarize observations of all climatic elements made during 1938 at various stations of Ethiopia, Eritrea and Italian Somaliland. *Subject Headings:* **Climatic data, Ethiopia, Eritrea, Italian Somaliland.**

2J–186 551.582.1(635)

Mennella, Cristofaro, **Profilo climatico dell'Africa Orientale Italiana.** [Climatic profile of Italian East Africa.] *L'Universo*, 19:1015–1028, **1938.** 8 diagrs. **NNA**—Descriptive account of

climate given, accompanied by diagrams plotting the curves of temperature, humidity and rainfall for Massaua, Ghenda, Cheren, Addis Ababa, and Somaliland. *Subject Headings:* **Climatology Eritrea.**

2J–187 551.582(63,677)

†Sala, Guido, **Clima dell'Ethiopia e confronti col clima dell'Eritrea e della Somalia.** [Climate of Ethiopia and comparison with the climate of Eritrea and of Somaliland.] Bergamo, S. Alessandro, **1938.** 141 p. 34 plates, graphs, bibliography p. 137–141. **DWB**—A good study of the climate of Italian East Africa. Chap. 1 gives lists of stations with maps and meteorological organization after the Italian conquest. Chap. 2 describes physical geography and its influence on climate. The remaining chapters take up distribution and annual variation of precipitation (including hail, dew, fog), thunderstorms, humidity, temperature, climagrams (precipitation-temperature), wind and pressure. These data are shown graphically in a series of diagrams. There is an extensive bibliography which is, however, poorly documented. *Subject Headings:* **Climatology, Ethiopia, Eritrea, Italian Somaliland.**—*C.E.P.B.*

1939

2J–188 551.506.3(635,613,614)

Fàntoli, Amilcare, **Dati medi di alcune località carateristiche dell'A.O.I.** [Mean values for some characteristic localities of Italian East Africa.] *Africa Italiana*, 2(11):29–30, **1939.** tables. **NNA**—Climatic tables for Addis Ababa, Gondar, Asmara, Gimma, Harar, Mogadiscio, 1937–1939, and for Gore and Gambela, 1916–1938, are given. On p. 30 are similar tables for places in Cirenaica and Tripolitania. *Subject Headings:* **Climatic data, Eritrea, Tripolitania, Cirenaica.**

2J–189 551.553.1 551.557

*Farquharson, J. S., **The diurnal variation of wind over Tropical Africa.** *Royal Meteorological Society, Quarterly Journal*, 65:165–183, **1939.** 6 figs., 5 tables, 10 refs. **DWB**—Upper wind observations from Khartoum, 1935–1936, are studied to investigate the unusual decrease of wind speed from morning to midday in central Sudan. Relations are noted with surface winds and temperature rises, and conclusions are drawn. *Subject Headings:* **Diurnal wind variations, Sudan, Central Africa.**

2J–190 551.521.11

Flower, William Dennis, **Sunshine in the southern Sudan.** *Royal Meteorological Society, Quarterly Journal*, 65:448–450, July **1939.** 2 tables. **NNA**—Brief report notes monthly duration of sunshine at Meridi (4°55′N., 29°30′E.) 1934–1937, and at Yei (4°7′N., 30°40′E.) 1933–1938, and calculated cloud amount. *Subject Headings:* **Sunshine duration, Cloud frequencies, Meridi, Yei, Sudan.**

2J–191 551.515 551.582(63)

§Morsellino, N. A., **L'evoluzione del tempo nell'Africa Orientale Italiana.** [Evolution of the weather in Italian East Africa.] *Rivista di Meteorologia Aeronautica*, 3(2):12–28, **1939.** 5 figs., 2 tables, 9 refs. **NN**—Author describes generally the geographical and orographical position of Italian East Africa, climatic zones, air masses and fronts, movements of air masses, winds, barometric gradients, general atmospheric circulation, synoptic situation and predominant winds. Representative synoptic charts are included. *Subject Headings:* **Climatology, Eritrea.**

2J–192 551.521

Orth, Reinhard, **Zur Kenntnis des Lichtklimas der Tropen und Subtropen sowie des tropischen Urwaldes.** [Knowledge of the radiation climate of the tropics and subtropics as well as of the virgin forests.] *Beiträge zur Geophysik*, 55:52–102, **1939.** 18 figs., 3 tables, refs. **NNA**—Investigation falls in three parts: 1) "light climate" of the Mediterranean Sea, Suez Canal and Red Sea; 2) that of the African continent (mostly in jungle sections of German East Africa, Uganda, Congo, etc.) and 3) that of tropical virgin forests (jungles). *Subject Headings:* **Radiation climate, Mediterranean Sea, Red Sea, Suez Canal, Tropical Africa.**

2J–193 551.577

Le pioggie in A.O.I. [Rainfall in Italian East Africa.] *Africa Italiana*, 2(11):7–14, Nov. **1939.** chart, photos. **NNA**—Chart shows rainfall regions of Italian East Africa (including Ethiopia). Conditions are briefly discussed, but no data are included. *Subject Headings:* **Precipitation, Eritrea, Ethiopia.**

2J–194 551.586

Troll, Carl and Schottenloher, Rudolf, **Ergebnisse wissenschaftlicher Reisen in Äthiopien. 1. Von Eritrea nach Gondar, Addis Abeba und Harar.** [Results of scientific journeys in Ethiopia.

. From Eritrea to Gondar, Addis Ababa and Harar.] *Petermanns Geographische Mitteilungen*, 5(7–8):215–238, July–Aug. 1939. 10 figs., map, 9 refs. **DLC, NNA**—On p. 219–225, distribution f vegetation and climatic types are correlated and shown on maps. *Subject Headings:* **Bioclima-ology, Eritrea, Ethiopia.**

2J–195 551.582.1(635)

Zone climatiche dell'A.O.I. [Climatic zones of Italian East Africa.] *Africa Italiana*, 2(11):1–, Nov. 1939. figs., photos. **NNA**—The climatic regions of the entire area are briefly described nd shown on a chart. Wind roses for Asmara, Addis Ababa and Harar for different seasons, and a hart showing mean annual temperatures in Ethiopia are included. *Subject Headings:* **Climatic egions, Eritrea.**

1940

2J–196 551.515.1:551.555.8(62)

El-Fandy, M. G., **The formation of depressions of the Khamsin type.** *Royal Meteorological ociety, Quarterly Journal*, 66:323–335, 1940. 15 figs., 5 tables, 6 refs. **DWB**—Conditions in spring hich produce khamsin conditions in Egypt are studied: air masses forming khamsin depressions; ain air currents of Egypt and the Sudan; and other meteorological conditions. (*Same item* as o. 242 in July 1951 *Meteorological Abstracts*.) *Subject Headings:* **Air masses, Khamsin, Egypt.**

2J–197 551.582:016(63)

†Fàntoli, Amilcare, **Elementi preliminari del clima dell'Etiopia.** [Principal elements of the limate of Ethiopia.] Florence, 1940. 299 p. figs., tables, biblio. p. 273–288. **DLC, NN**—horough study made of the climate and hydrography of Ethiopia and of the meteorological program f Italian East Africa. Included are an important meteorological and geophysical bibliography of thiopia, Eritrea, and Somaliland, p. 273–283, and a hydrographical bibliography, p. 284–288. he discussion of climate takes up climatic zones, pressure, temperature, wind, humidity, evapora-on, cloudiness, fog and rainfall. References in the bibliography are arranged alphabetically, not nnotated, and give a thorough coverage of material from early 19th century to date. *Subject eadings:* **Climatology, Hydrography, Bibliographies, Ethiopia, Eritrea, Somaliland.**

2J–198 551.515.1(624)

Mahmud, Hamed, **The variations of the Sudan monsoon low.** *Royal Meteorological Society, uarterly Journal*, 66:335–336, 1940. 3 figs., ref. **DWB**—Author finds close relations between uctuations of temperature and pressure in the northern Sudan. *Subject Heading:* **Sudan Monsoon ow.**

2J–199 551.506.1(635)

*Morsellino, N. A., **Caratteristiche del tempo nell'Africa Orientale Italiana. . . .** [Character-tics of the weather of Italian East Africa.] *Rivista di Meteorologia Aeronautica*, 2(1):45–65, larch 1938 through 4(3), 1940. tables. **DWB**—Each issue contains discussion and tables of bservational data which were compiled at the aeronautical meteorological center at Asmara in receding months. *Subject Headings:* **Observational data, Climatology, Asmara, Eritrea.**

2J–200 551.583.3:551.311.12

†Nilsson, Erik Ejnar, **Ancient changes of climate in British East Africa and Abyssinia; a study f ancient lakes and glaciers.** *Geografiska Annaler*, 22(1–2):1–79, 1940. 45 figs., table, 25 refs., **NA**—Results of a geological expedition to British East Africa and Abyssinia in 1932–33 are given. he evidence of ancient lakes and glaciers is studied by area and comparisons are made with other uaternary climatic changes. The main stages of the evolutional history of ancient lakes and laciers in British East Africa are summarized. *Subject Headings:* **Climatic changes, Quaternary imates, Glaciology, Ethiopia, British East Africa.**

1941

2J–201 551.582(539.3)

France. Office National Météorologique, **Caractères généraux du temps sur la côte occidentale e la Mer Rouge.** [General weather characteristics on the west coast of the Red Sea.] Paris, 941. 8 p. Unchecked.—Tables for Suez, Port Sudan, Suakin. *Subject Headings:* **Climatology, uez, Port Sudan, Suakin, Red Sea, Egypt, Sudan.**

2J–202 551.582:629.13(63)

Meteorological report on Abyssinia, Eritrea and Somaliland. *Great Britain, Meteorological ffice, Aviation Meteorological Report* No. 10, 1941. 59 p. (MOM 365/10.) Unchecked.—*Subject eadings:* **Aeronautical climatology, Ethiopia, Eritrea, Somaliland.**

2J–203 551.506.5(612.3)

Peel, R. F., **Some meteorological observations in the Libyan Desert.** *Royal Meteorological Society, Quarterly Journal*, 67:153–156, April **1941.** table, ref. **DWB**—Unbroken meteorological records made three times daily for six weeks in the extreme southwest corner of Egypt on an expedition in 1938 are briefly summarized. Temperature, pressure, wind, clouds, precipitation and humidity are described, with a small amount of data for humidity only. *Subject Headings:* **Fragmentary climatic data, Libyan Desert, Egypt.**

1942

2J–204 551.582(62)

Crow, Walter L., **The climate of Egypt.** Pasadena, **1942.** 19 p. figs., table, 8 refs. **DWB**—Superficial treatment is given to the climatic elements of Egypt; mostly descriptive, with some illustrative diagrams. *Subject Headings:* **Climatology, Egypt.**

2J–205 551.582.2(624)

*Frankel, M. H., **Climatic statistics for selected stations in Anglo-Egyptian Sudan.** *U. S. Weather Bureau, Special Report* No. 107, **1942.** 5 p. 5 tables. (*U. S. Air Forces Report* No. 534.) **DWB**—Climatological data for varying numbers of years are tabulated for stations in the Sudan: Hillet Doleib, Khartoum, Lerua, Port Sudan, Mongalla, and some for Kodok. *Subject Headings:* **Climatology, Sudan.**

2J–206 551.582.2:629.13(62,624)

*§Germany. Reichsamt für Wetterdienst, **Flugklimatische Übersicht über Ägypten und den english-ägyptischen Sudan, unter Berücksichtigung der Flugbasen in Griechenland, Kreta, und Cyrenaika.** [Aviation climatic survey of Egypt and the Anglo-Egyptian Sudan, with consideration of air bases in Greece, Crete, and Cirenaica.] Berlin, **1942.** 27 p. 17 figs., 15 tables. **DWB**—A thorough, comprehensive survey is given of the climatic elements pertinent to aviation of, principally, Egyptian and Sudan stations, with some notations for Cirenaica. Wind distribution, speed, storms, cloud-heights, daily conditions, ceilings, precipitation, temperature, relative humidity and visibility conditions are taken up. Tables give representative data for numerous stations and climatological and synoptic conditions are shown graphically. *Subject Headings:* **Aeronautical climatology, Egypt, Sudan, Cirenaica.**

2J–207 551.582.2(6)

Williams, R. C., Foster, R. and Larson, L., **Climate and weather of East Africa.** *California Institute of Technology, Military Climatology*, Vol. 1, **1942.** 44 p. maps, tables. **DWB**—The section on East Africa is divided into several parts: 1) Mozambique. 2) British East Africa, and 3) British, French and Italian Somaliland. The last named section consists of 9 pages of general descriptive matter (probably taken from KENDREW), supported by a crude isohyetal chart (mean annual rainfall), and climagrams for Berbera and Zeila, showing the monthly temperature vs. relative humidity to be such that these places would be classed as "enervating." No references or tabular material detract from the smoothness of the descriptive material in the text. *Subject Headings:* **Climatology, East Africa.**—*M.R.*

1943

2J–208 551.506.3(635)

*Fântoli, Amilcare, **Risultati di tre anni di osservazioni meteorologiche nell'Africa Orientale Italiana.** [Results of three years of meteorological observations in Italian East Africa.] *Deutsche Geographische Gesellschaft, Zusammenkunft europäischer Geographen in Würzburg*, März 1942, *Sitzungsberichte*, 16–19, Leipzig, **1943.** p. 499–524. tables. German summary. **NNA**—Summary made of climatic conditions of regions from studying data of numerous stations over three-year period. Summary tables for Addis Ababa, Gimma, Harar, and Gondar are included. *Subject Headings:* **Climatic data, Eritrea**

2J–209 551.582:629.13(81,263,6)

Fletcher, Lyle R., **Air route weather summary: Natal to Cairo.** *U. S. Weather Bureau, Special Report* No. 311, **1943.** 29 p. 14 tables. (*U. S. Air Forces Report* No. 452.) **DWB**—Work is divided into four sections for each of which meteorological descriptions are given: Natal, Brazil, to Ascension Island; Ascension Island to Accra, Gold Coast; Accra to Khartoum, Sudan; Khartoum to Cairo. Accounts and tables are given of terminal climates of Khartoum and other Sudan points, Wadi Halfa, Asyut and Cairo, Egypt, as well as of other terminal climates (outside Northeast Africa) along the route. *Subject Headings:* **Aeronautical climatology, Natal-Cairo air route, Natal, Brazil, Ascension Island, Accra, Gold Coast, Khartoum, Sudan, Cairo, Egypt, Northeast Africa.**

2J–210 551.577:551.506.3(6)

*Hurst, Harold Edwin and Black, R. P., **The Nile Basin. Vol. VI. Monthly and annual rainfall totals and number of rainy days at stations in and near the Nile Basin for the period ending 1937.** *Egypt, Physical Dept. Paper* No. 43, **1943.** 613 p. map, 4 plates, extensive tables. **NNA.** . . . *Supplement 1.* **Monthly and annual rainfall totals . . . for the period 1938–1942.** *Ibid.*, No. 49, 1950. 227 p. **DWB**—Work contains a synopsis of all rainfall statistics relating to the Nile Basin through 1942. Contents devoted entirely to tables on: normal rainfall, normals by districts, details of rainfall and monthly and annual rainfall totals in: Egypt, Sudan, Eritrea, Abyssinia, Uganda, Kenya Colony, Tanganyika Territory and Belgian Congo. *Subject Headings:* **Precipitation, Observational data, Nile Basin, Northeast Africa, East Central Africa.**

2J–211 551.586:63

Mazzoni, Guglielmo, **Considerazioni pratiche, agrarie su gli elementi del clima dello Scioa.** [Practical agricultural considerations on the climatic elements of Scioa.] *L'Agricoltura Coloniale*, 37:113–123, May **1943.** refs. **NNA**—Climatic elements are considered in relation to the agricultural calendar of the natives, particularly in the region of Addis Ababa. *Subject Headings:* **Agricultural climatology, Addis Ababa, Ethiopia.**

2J–212 551.582:629.13(6,262,539.3)

***Naval air pilot; northeast Africa including adjacent Mediterranean Sea and Red Sea areas; weather summary.** *U. S. Hydrographic Office Publication* No. 262, Supplement "B," **1943.** 120 p. 39 charts, 5 extensive tables. **DWB**—Region includes Cirenaican Libya, Egypt, Sinai Peninsula, northern Anglo-Egyptian Sudan, Eritrea and French Somaliland, as well as adjacent parts of Mediterranean and Red Sea, Gulf of Sidra and Gulf of Aden. Contents include table of wind force and state of sea surface with specifications and equivalents; travelling depressions; atmospheric pressure and its weather controls; marine meteorology including all climatic elements and the sirocco, khamsin and winds of the Red Sea; coastal and continental meteorology, including as well as temperatures, rainfall, etc., special winds and sand devils; upper air winds; and, finally, extensive meteorological tables for surface stations and ocean areas. *Subject Headings:* **Aeronautical climatology, Marine climatology, Northeast Africa, Mediterranean Sea, Red Sea.**

2J–213 551.582:629.13(6,696)

***Naval air pilot; East Central Africa including Zanzibar and Seychelles Islands; weather summary.** *U. S. Hydrographic Office Publication* No. 263, Supplement "B," **1943.** 158 p. 39 charts, 7 extensive tables, refs. **DWB**—Region includes all southern Anglo-Egyptian Sudan, Kenya, Uganda, Tanganyika, British Somaliland, Italian Somaliland, central and southern Ethiopia and eastern Belgian Congo—12°N. to 10°S.—as well as part of Indian Ocean and Arabian Sea, Socotra and the Seychelles, 25° to 60°E. Contents include sections on: atmospheric pressure and its weather controls; ocean meteorology; climate of the Seychelles; climatic elements of the coast and of the interior, including general wind circulation and local winds of Sudan and Ethiopia, temperature, rainfall, etc.; upper air winds and, finally, extensive tables of meteorological data for land stations and ocean areas. *Subject Headings:* **Aeronautical climatology, Marine climatology, Somaliland, Sudan, Ethiopia, Socotra, British East Africa, Seychelles, Zanzibar, Congo Basin.**

2J–214 551.555.8

§Schempf, W. H., **On haboobs in the Egyptian Sudan.** *American Meteorological Society, Bulletin*, 24(10):371–377, Dec. **1943.** 5 figs., 5 refs. **DWB**—Thorough, descriptive account referring to source material rather than using original data. *Subject Headings:* **Haboobs, Sudan.**

2J–215 551.513:551.582(624)

§Solot, Samuel B., **The meteorology of Central Africa.** Accra, British West Africa, Nov. **1943.** 59 p. 55 figs., appends. (*U. S. Air Weather Service, Research Report* 105-50.) **DWB**—Comprehensive and detailed survey made principally of the weather of the Anglo-Egyptian Sudan. The chapters take up general circulation in the lower troposphere; air mass properties; the intertropical front; haze, dust and sandstorms; harmattan haze; rainfall in the Sudan; and, lastly, dynamic climatology (which is an interpretation of climatological data in terms of the circulation), attempting to broaden the range of study by classification of the region into five homogeneous weather zones and by brief discussion of the problems of each zone. Results of study are generalized into five fundamental principles of tropical meteorology. Two appendices are included: one on suggestions in map analysis; the other on the techniques employed in this study, as well as typical synoptic and adiabatic charts, isopleths, flow charts, comparative curves and other interesting schematic diagrams. *Subject Headings:* **Climatology, Atmospheric circulation, Tropical meteorology, Sudan, Central Africa.**

2J–216 551.582:629.13(667,624)

Takoradi-Khartoum air route. *Great Britain, Meteorological Office, Aviation Meteorological Report* No. 17, 1943. 42 p. 2 plates. (MOM 365/17.) Unchecked in U.S.A.—Climatic tables for El Geniens, El Fasher, El Obeid, Gebel Aulia and Khartoum are included. *Subject Headings:* **Aeronautical climatology, Takoradi-Khartoum air route, Gold Coast, Sudan.**

1944

2J–217 551.579 551.582(62)

*Egypt. Physical Dept., [**Report on the weather and state of the river for the month . . . 1934–1944.**] tables. **DWB**—"Discharges of the Nile" included in 1934–1938. Monthly descriptive comments are made along with brief summary tables of pressure, temperature and rainfall for various sections of Egypt and the Sudan. The state of the river level is given along with summary tables of mean differences of levels for different stations. *Subject Headings:* **Climatology, Water level variations, Nile River, Egypt, Sudan.**

2J–218 551.582.2:551.46(539.3,6)

*Great Britain. Hydrographic Office, **Red Sea and Gulf of Aden pilot; comprising Suez Canal, Gulfs of Suez and Aqaba, the Gulf of Aden, the southeast coast of Arabia . . . the coast of Africa from Ras Hasir to Ras Hafun, Socotra and its adjacent islands.** 9th ed. London, **1944.** tables. **DLC**—Section on meteorology p. 26–62. General description of meteorological elements are given along with tables giving values for pressure, temperature, relative humidity, cloud, rain and wind for varying periods of years for various regions. (*See also item* No. 2F–98 in June 1951 *Meteorological Abstracts.*) *Subject Headings:* **Marine climatology, Red Sea, Gulf of Aden, African Coast.**

2J–219 551.582(62)

Hurst, Harold Edwin, **A short account of the Nile Basin.** *Egypt, Physical Dept. Paper* No. 45, **1944.** 77 p. map, 14 figs., tables, refs. **NN**—General account of history, hydrology, irrigation, flood protection, projects, and climate are given. Climate is surveyed (p. 25–36), including some summarized values for temperature, humidity and rainfall. *Subject Headings:* **Climatology, Nile Basin, Northeast Africa.**

2J–220 551.582:629.13(6,53)

Pan American Airways System, **African and Arabian weather.** Miami, **1944.** 40 p. 10 figs. (U. S. Office of Naval Operations, NAVAER 50-1R-130.) **DWB**—A scholarly, descriptive, rather than analytical, discussion is given of weather conditions having a direct bearing on airline operations over West Africa, East Africa and South Arabia. Part I on West Africa summarizes the observations of natives at ground stations and of pilots on flights and gives the outstanding seasonal weather factors by area. Part II on East African and south Arabian weather discusses the varying weather types on the air route from Fort Lamy to Cairo and from Fort Lamy to Karachi by separating the route into zones: Fort Lamy to Khartoum, Khartoum to Cairo, Khartoum to Aden, Aden to Karachi. Principal seasonal variations of weather are described and upper air wind data are summarized. *Subject Headings:* **Aeronautical climatology, Northwest Africa, Northeast Africa, Arabia.**

1945

2J–221 551.555.8:551.510.42

*Oliver, F. W., **Dust-storms in Egypt and their relation to the war period as noted in Maryut 1939–45.** *Geographical Journal,* 106(1–2):26–49, July–Aug. **1945.** 7 figs., 3 tables, refs. Supplement, *ibid.,* 108:221–226, Oct.–Dec. 1946. 2 figs. **NNA**—First paper deals with the general phenomena involved in desert dust storms as illustrated by their incidence observed at Burg el 'Arab on the Western Desert of Egypt during entire period, 1939–1945, when the desert was subject to a sequence of disturbances from military operations. Work is substantially a record of observations of dust storms; other topics considered are: topography, wind and weather, sand and dust characteristics, particle dimensions, sedimentation, accumulation of dust and effect of dust on military operations. The supplement adds the seventh year of observation, 1945–1946, after cessation of military activity, giving dust storm incidence and discussion of soil migration, dust fertility, control of drift and transport of dust by water. *Subject Headings:* **Dust storms, Maryut, Egypt.**

2J–222 551.577

§Soliman, K. H. and Ahmed, M. M. Sayed, **Long duration of rainfall over Egypt, during the period 29th to 31st December 1944.** *Mathematical and Physical Society of Egypt, Proceedings,* 3(1):37–47, **1945.** 8 figs., 3 tables, 4 refs. **DLC**—Detailed synoptic analysis of conditions over Northeast Africa during this period of unusual continuous rainfall is given along with synoptic charts

and tephigrams. It was found that potential instability, released by isallobaric uplift and partially by ascent of warm air above a cold front, was responsible for the rain. *Subject Headings:* **Precipitation, Synoptic analysis, Tephigrams, Egypt.**

2J–223 551.584.65

*Sutton, L. J., **Meteorological conditions in caves and ancient tombs in Egypt.** *Egypt, Physical Dept. Paper* No. 50, **1945.** 81 p. 20 figs., 17 tables, refs. **NN**—Analysis made of meteorological conditions in one of the caves in the Muqattam hills at Tura, near Cairo. Observations of temperature, moisture content, relative humidity and evaporation were made in this cave. Temperature and humidity conditions in several ancient Egyptian tombs are also noted. *Subject Headings:* **Microclimatology, Caves, Tombs, Egypt.**

1946

2J–224 551.555.8

Birtwistle, Arthur, **The khamsin in northern Egypt.** *Geography*, 31:59–62, June **1946.** ref. **NNA**—Descriptive account which mentions the two types of barometric depressions which give rise to these winds during the spring months. Periods, area, accompanying wind and weather conditions, dust, and effects are taken up briefly. A few examples and statistics (not tabulated) are cited briefly. *Subject Headings:* **Khamsin, Egypt.**

2J–225 551.521.11

Fàntoli, Amilcare, **Risultati preliminari di alcune osservazioni meteorologiche in Eritrea ed in Etiopia.** [Preliminary results of some meteorological observations in Eritrea and in Ethiopia.] *Rivista di Agricoltura Subtropicale e Tropicale*, 40(7–12)37–45, July–Dec. **1946.** map, tables, ref. **NNA**—Discussion and brief data are given on duration of sunshine (eliofania); chart shows distribution in Eritrea, Ethiopia and Somaliland. *Subject Headings:* **Sunshine duration, Eritrea, Ethiopia, Somaliland.**

2J–226 551.582(62)

*Sutton, L. J., **The climate of Egypt; a short description intended primarily for visitors.** Cairo, [**1946**]. 48 p. map, 5 tables. **NNA**—Fairly thorough descriptive survey given in sections on: geographical features; general climatic features; temperature (with monthly summary tables of means and extremes); sunshine and cloudiness, winds; humidity (with monthly summary table of relative humidity at different times of day and different places); rainfall (with monthly averages tabulated by region). Brief summary of climates of Alexandria and Cairo appended in a small table. *Subject Headings:* **Climatology, Cairo, Alexandria, Egypt.**

2J–227 551.525 551.526

*Sutton, L. J., **Earth and water temperatures in Egypt.** *Egypt, Physical Dept. Paper* No. 52, **1946.** 91 p. 9 figs., 48 tables, refs., 11 equations. **NNA**—Paper summarizes observations of earth temperature to a depth of 2 m. at a number of stations in Egypt, and of water temperature of the Nile, lakes Qarum, Maryut and Edku, Mediterranean Sea, Suez Canal and Red Sea, as well as some observations of household tap and other water temperatures near Cairo. *Subject Headings:* **Earth temperatures, Water temperatures, Egypt, Nile River, Mediterranean Sea, Suez Canal, Red Sea.**

1947

2J–228 551.506.3 51.582.2(6)

*Clayton, H. H. (*comp.*), **World weather records.** *Smithsonian Miscellaneous Collections*, 79, 90, 105, 1927, 1945, **1947.** 1199 p., 616 p., 646 p. **DWB**—Official observations of meteorological elements for varying long periods are organized in tabular form for various regions all over the world, including all general divisions of Africa. *Subject Headings:* **Climatic data, Africa.**

2J–229 551.578.4 551.578.7

Sutton, L. J., **Snow and hail in Egypt.** *Weather*, 2:218–221, July **1947.** map. **DWB**—Snow is rare in Egypt except on highest mountains in Sinai Peninsula, with occasional records of unusual snow (very light) along the Mediterranean coast of Egypt. Hail storms occur yearly along with thunderstorms, mostly in Oct.–Dec. *Subject Headings:* **Snow, Hail, Egypt.**

1948

2J–230 551.582.3(6)

The climate of the world. 3. Africa. *Weather*, 3:363–366, **1948.** numerous diagrs. **NNA**—Monthly diagrams of temperature, pressure and rainfall for Alexandria, Heliopolis, Suakin, Khar-

toum, Harar, Berbera and Mongalla are given for Northeast Africa, for Northwest Africa (Algiers Geryville, In Salah, Cape Juby, Timbuktu) and for various other points in southern Africa. *Subject Headings:* **Climatic charts, Northeast Africa, Northwest Africa.**

2J–231 551.506.1(62)

*Egypt. Physical Dept., **Daily Weather Report.** Cairo, 1907–1937; July 1938–June 1940; Jan. 1945–Dec. 1947; July–Dec. **1948.** 47 Vols. tables. **DWB**—From 1907–April 12, 1915: issued by the Survey Dept.; April 13, 1915—by the Ministry of Public Works, Physical Dept. March 16–April 30, 1919, not published. Daily synoptic maps and data are recorded in detail. *Subject Headings:* **Observational data, Synoptic charts, Egypt.**

2J–232 551.555.8

El-Fandy, M. G., **Alcune caratteristiche del fronte del vento durante le tempeste di sabbia in Egitto.** [A few characteristics of fronts of winds during sand storms in Egypt.] *Annali di Geofisica,* 1(4):610–615, Oct. **1948.** 5 figs., 3 equations, **NNA**—Wind velocities during various sand storms in North Africa are studied from anemometer records for Khartoum, Cairo, Heliopolis, and Almaza (near Cairo). *Subject Headings:* **Sand storms, Haboobs, Egypt, Khartoum, Sudan.**

2J–233 551.515(62,569.4,569.1)

El-Fandy, M. G., **The effect of the Sudan monsoon low on development of thundery conditions in Egypt, Palestine, and Syria.** *Royal Meteorological Society, Quarterly Journal,* 74:31–38, Jan. **1948.** 8 figs., 2 tables, 3 refs. **DWB**—Thundery conditions which develop in region in autumn are investigated and found to occur when Sudan Monsoon Low intensifies toward the north and supplies the eastern Mediterranean with a warm south-easterly current. Conditions which create the high degree of latent instability over Egypt are elaborated. *Subject Headings:* **Air masses, Thunderstorms, Sudan Monsoon Low, Egypt, Palestine, Syria.**

2J–234 551.582(624)

*Ireland, A. W., **The climate of the Sudan.** (In **Agriculture in the Sudan.** Tothill, J. D. (*ed.*). London, Oxford University Press, **1948.** p. 62–83. 6 figs., 11 tables.) **NNA**—General descriptive account of climate as determined from study of air masses and geographical position is given; temperature, humidity, and rainfall tables and maps are appended, using data from numerous sources. *Subject Headings:* **Climatology, Sudan.**

1949

2J–235 551.555.8

*§Ahmed, M. M. Sayed, **Khamsin and khamsin conditions.** *Egypt, Meteorological Dept. Paper* No. 1, **1949.** 57 p. 4 figs., 14 tables, 17 refs. **DWB**—Observations of khamsin depressions and accompanying weather conditions over Egypt, 1923–1942, are studied. Depressions of seven types are recognized, described, and the frequency of occurrence of each type determined for every month. Meteorological factors, favoring formation of khamsin conditions, and origins of air masses in each case are given and shown graphically. *Subject Headings:* **Khamsin, Air masses, Egypt.**

2J–236 551.509.311:551.515.8:551.582(624)

§El-Fandy, M. G., **Forecasting the summer weather of the Sudan and the rains that lead to the Nile floods.** *Royal Meteorological Society, Quarterly Journal,* 75:375–398, Oct. **1949.** 21 figs., 4 tables, 6 refs. **DWB**—A thorough aerological and synoptic study is made. Disturbances in the average pressure distribution and the variations in the general wind circulation associated with day-to-day weather changes in the Sudan are analyzed. Four types of summer disturbances are defined: sand storms or haboobs with a modification of the general circulation by the onset of strong south winds; dust storms or haboobs with line squalls set up by thunderstorms; local instability thunderstorms and widespread thunderstorms. *Subject Headings:* **Synoptic aerological studies, Precipitation forecasting, Nile floods, Sudan.**

2J–237 551.509.59:551.576

§El-Fandy, M. G. and Elnesr, M. K., **On the conditions favoring low stratus formation over the Middle East in summer.** *American Meteorological Society, Bulletin,* 30(10):357–359, Dec. **1949.** 4 figs., table, 4 refs. **DWB**—A short discussion of subsidence and the general vertical structure of the atmosphere over Egypt in summer, with examples and illustrative synoptic charts. (*Same abstract* as No. 3–35 in March 1950 *Meteorological Abstracts.*) *Subject Headings:* **Cloud forecasting, Egypt.**

2J–238 551.506.1:551.5:06(677.1)

*France. Météorologie Nationale, **Côte française des Somalis; bulletin annuel du service météorologique année 1947.** [Annual bulletin of the meteorological service for the coast of French

Somaliland, 1947.] Paris, Imprimerie Nationale, **1949.** 28 p. map, tables. **MH-BH**—Location of stations shown on map. History and organization of the Meteorological Service of French Somaliland are given, as well as discussion of weather of each month and tables of usual meteorological elements plus evaporation, visibility and other phenomena. Graphs include wind roses for Djibouti. *Subject Headings:* **Climatic data, Annual reports, Meteorological services, French Somaliland, Africa.**—*M.R.*

2J–239 551.506.3:551.582:551.46(539.3)

Rode Zee en Golf van Aden. [Red Sea and Gulf of Aden.] *Netherlands, (K.) Meteorologische Instituut,* No. 129 [Dec. **1949**]. 26 p. 49×58 cm. Price F 10. **DWB**—Based on the punch card catalog of ship observations, maintained by the Netherlands Meteorological Institute, and observations from 30 Swedish log books (prior to 1921), charts have been drawn for surface winds, air flow, currents, pressure, air and sea temperatures, gales, tropical cyclones, fog, dust and precipitation for the Red Sea area. Not only isolines for mean values, but actual frequency and standard deviation data are included for each 1° square of latitude and longitude. Nearly half a million observations are summarized and methods of preparation of charts, described. A nice job! (*Same abstract* as No. 2.10–23 in Oct. 1951 *Meteorological Abstracts.*) *Subject Headings:* **Marine climatology, Atlases, Red Sea, Gulf of Aden.**—*M.R.*

2J–240 551.506.3:551.577(624,635)

*Sudan, Anglo-Egyptian. Meteorological Service, **Monthly rainfall statistics, 1944–1949.** Khartoum, 1944–**1949.** extensive tables. **DWB**—Detailed data by month for period are included for numerous stations in Sudan, along with some Eritrean monthly rainfall statistics and annual rainfall statistics for the years 1942–1949 (1949 latest checked but more recent are available). *Subject Headings:* **Precipitation data, Sudan, Eritrea.**

2J–241 551.577:551.579

†*Sutton, L. J., **Rainfall in Egypt: statistics, storms, runoff.** *Egypt, Physical Dept. Paper* No. 53, **1949.** 129 p. 2 maps, 2 photos, 30 tables, numerous refs. **NN**—Paper gives extensive rainfall statistics with totals for each year; it includes the earliest records of rainfall measurements in Egypt which have been found, accounts of exceptional storms and the relation of runoff to rainfall. *Subject Headings:* **Precipitation, Runoff, Egypt.**

2J–242 551.582:629.13(612,612.3,62)

***Aviation meteorology of the route Castel Benito—Cairo.** *Great Britain, Meteorological Office, Meteorological Reports,* 1(5), **1950.** 46 p. maps, 9 figs., numerous tables, 12 refs. **NNA**—The first section, synoptic meteorology, discusses the various factors controlling the weather over the route as a whole and types of weather affecting this route. The second part describes the climate of summer and winter separately for each major section of air route. Appended tables give: values at different places along the route for general climatic elements; percentage frequency of occasions of visibility within certain ranges; percentage frequency of height of cloud base within certain ranges; percentage frequency of upper air wind speed and direction within certain ranges; and mean and extreme upper air temperatures. A small table gives percentage frequencies of red and green flying fitness. *Subject Headings:* **Aeronautical climatology, Synoptic meteorology, Castel Benito-Cairo air route, Tripolitania, Libya, Egypt.**

1950

2J–243 551.582.1(677)

Cerasuolo, Fernando, **Cenni climatologici sulla Somalia con particolare riferimento alle condizioni di volo.** [Climatological sketch of Somaliland with particular reference to flying conditions.] *Rivista di Meteorologia Aeronautica,* 10(3):26–28, July–Sept. **1950.** Italian, French, English and German summaries p. 26. **MH-BH**—Temperature, rainfall, cloudiness and atmospheric circulation conditions over Somaliland are briefly summarized for the two seasons. The "zone of convergence" is described and dangers from cumulonimbus, turbulence and icing (above 4000 m.) are the chief hazards. (*Same abstract* as No. 2.9–156 in Sept. 1951 *Meteorological Abstracts.*) *Subject Headings:* **Climatology, Somaliland.**—*M.R.*

2J–244 551.506.3(62,624,63)

†*Egypt. Meteorological Dept. and Physical Dept., **Climatological normals for Egypt. . . .** Cairo, 1922, 1938, **1950.** (Three papers.) 100 p., 148 p., 157 p. maps, figs., extensive tables, refs. **DWB, NNA**—In the 1922 work, published by the Physical Dept., climatological normals, based on 20 years or more observations, are tabulated for numerous stations in Egypt and the Sudan, and for a few stations in Candia, Cyprus and Abyssinia. In the 1938 work, published by the Physical Dept., climatological normals for varying number of years, made (except for some of the earliest) under

standardized conditions, are tabulated. Some observations in Cyprus, Palestine and Abyssinia included. In the 1950 work, published by the Meteorological Dept., normals of 55 Egyptian meteorological stations and 26 rainfall stations are brought up to 1945. A considerable number of stations refer back more than 30 years, with most of the observations having been made under standardized conditions. Besides the usual climatic elements, some of the stations recorded values for earth temperature, grass minimum temperature, river and sea temperature, actinometric observations, duration of bright sunshine, maximum wind velocity and evaporation. *Subject Headings:* **Climatic data, Egypt, Sudan, Ethiopia, Cyprus, Palestine.**

2J–245 551.506.3(05)(62)

*Egypt. Meteorological Dept., **Meteorological Report . . . 1900–1947.** Cairo, 1903–1950. 38 Vols. figs., tables. **DWB**—Report gives monthly summaries and abridged monthly summaries (full observations being available on request). Meteorological elements included are: pressure, humidity, wind, rain, evaporation, sunshine, earth and river temperatures over a wide range of stations in Egypt, Sudan, and Addis Ababa, Abyssinia. Some of the earlier *Meteorological Reports* occasionally contain, as well as tables of observational data, papers on various phenomena and climates of particular sections of the region. *Subject Headings:* **Climatology, Climatic data, Egypt, Sudan, Ethiopia.**

2J–246 551.515.127:551.509.317(62,63)

El-Fandy, M. G., **Troughs in the upper westerlies and cyclonic developments in the Nile valley.** *Royal Meteorological Society, Quarterly Journal,* 76(328):166–172, April **1950.** 4 figs., 2 tables. **DWB**—In the Egyptian-Abyssinian region troughs develop in the upper westerlies above 2 km. extending as far as 20°N. Centers of convergence form at their southern limits; these are studied by stream-line charts, two sequences of which are given. They develop into upper cyclones of two types, one travelling NE or N and the other SW in the usual E–NE upper current; the latter may ultimately give rise to the "tornadoes" of West Africa. Analysis is of value in forecasting upper winds. (*Same abstract* as No. 6–45 in June 1950 *Meteorological Abstracts.*) *Subject Headings:* **Atmospheric disturbances, Forecasting winds aloft, Egypt, Ethiopia.**—*C.E.P.B.*

2J–247 551.579 551.582(61)

*Hurst, Harold Edwin, **The Nile Basin. Vol. VIII. The hydrology of the Sobat and White Nile and the topography of the Blue Nile and Atbara.** *Egypt, Physical Dept., Paper* No. 55, **1950.** 141 p. photos, chart, graphs, tables, refs. **DWB**—Chapter I describes the Sobat and its tributaries, the Baro and the Pibor and outlines projects for conservation and reclamation on the Baro. Chapter II deals with the hydrology of the White Nile. Chapter III covers the topography of the Blue Nile Basin, including a section on the climate of Ethiopia. Chapter IV is devoted to the topography of the Atbara Basin. *Subject Headings:* **Hydrology, Climatology, Nile Basin, Ethiopia.**—*M.L.R.*

2J–248 551.571.35

Matthews, L. S., **Low dew point at Khartoum.** *Weather,* 5(7):263, July **1950.** table. **DWB**—On May 6, 1950, dew point fell from 15.5 to −1.2°C. between 18 and 21 h. Attributed to a "subsidence funnel." (*Same abstract* as No. 9–106 in Sept. 1950 *Meteorological Abstract.*) *Subject Headings:* **Dew point, Khartoum, Sudan.**—*C.E.P.B.*

2J–249 551.509.31:551.575

§Simon, Albert, **Methods of stratus and fog forecasting for Payne Field (Farouk Airport) and vicinity, Egypt.** *American Meteorological Society, Bulletin,* 31(7):257–263, Sept. **1950.** 8 figs. (incl. synoptic charts), 5 tables. **MH-BH**—Fog frequencies, stratus frequencies and the synoptic situation associated with fog and stratus formation at Payne Field are presented. The meteorological conditions during several instances of fog and stratus formation are analyzed. Surface and upper wind criteria for fog and stratus formation and a fog and stratus prediction diagram for Payne Field are given. Directions for the forecaster to follow in predicting fog and stratus are presented. (*Same abstracts* as No. 2.1–50 in Jan. 1951 *Meteorological Abstracts.*) *Subject Headings:* **Fog forecasting, Synoptic analysis, Cairo, Egypt.**—*I.L.D.*

2J–250 551.513:551.557

§Solot, Samuel B., **General circulation over the Anglo-Egyptian Sudan and adjacent regions.** *American Meteorological Society, Bulletin,* 31(3):85–94, March **1950.** 14 figs., 4 tables, 4 refs. **DWB**—A study is made of air flow patterns over East Africa during four seasons: the dry season, the season of approaching rains, the rainy season and the season of retreating rains. Detailed one-day and five-day trajectories of the air flow in the layer from the surface to 10,000 feet, typical synoptic

charts for the various seasons, seasonal upper air temperatures, air mass properties and location of upper air observation stations are presented in graphs, charts and tables. The ITC (Intertropical Convergence Zone) is shown to be the major climatic control. Paper based on a previous report by the author, published by the *U. S. Air Weather Service, Research Report* No. 105–50 (*see item* 2J–215). (*Same abstract* as No. 6–41 in June 1950 *Meteorological Abstracts.*) *Subject Headings:* **Tropical meteorology, Atmospheric circulation, Upper air winds, Air masses, Sudan, East Africa.**—*M.R.*

2J–251 551.582(62)

Sutton, L. J., **The climate of Egypt.** *Weather*, 5(2):59–62, Feb. **1950.** 2 photos, table. **DWB**—Egyptian weather is summarized, noting seasonal variations and phenomena such as khamsin. Humidity and rainfall are discussed separately, and a brief table of comparative means of temperature, relative humidity and rainfall for various Egyptian stations is given. (*Same item* as No. 4–130 in April 1950 *Meteorological Abstracts.*) *Subject Headings:* **Climatology, Egypt.**

2J–252 551.594.7

Unusual report on radar performance from the T.S.S. Clan Davidson on a voyage from Suez to Aden. *Marine Observer*, 20(150):212–216, Oct. **1950.** 2 figs. **MH-BH**—False echoes recorded on constant bearing 10 to 3 miles in superrefraction, May 7–8, 1949. Notes by HOPKINS and DE PAGE. Explanation obscure. (*Same abstract* as No. 2.2–172 in Feb. 1951 *Meteorological Abstracts.*) *Subject Headings:* **Radar echoes, Red Sea.**—*C.E.P.B.*

1951

2J–253 551.582:016(62,61,262)

†Kramer, Harris P., **Selected annotated bibliography on the climatology of the Near East.** *Meteorological Abstracts and Bibliography*, 2(5):273–404, May **1951.** 239 refs. **DWB**—Although this bibliography deals primarily with countries of the Near East, some items include consideration of Egypt, particularly the Sinai Peninsula, North Africa and the Mediterranean Sea, including those parts bordering the coastal regions of Northeast Africa. A similar bibliography on climatology of the Middle East, *ibid.*, No. 6, June 1951, includes items on the Red Sea and Gulf of Aden which border Northeast Africa. *Subject Headings:* **Climatology, Bibliographies, Near East, Middle East, Northeast Africa, Mediterranean region, Red Sea, Gulf of Aden.**

SUPPLEMENTARY MATERIAL

(*Came to our attention too late for inclusion in proper order*)

2J–254 551.5:016(624)

†Hill, Richard Leslie (*comp.*), **A bibliography of the Anglo-Egyptian Sudan from the earliest times to 1937.** London, Oxford University Press, Humphrey Milford, **1939.** 213 p. **DLC**—A classified, unannotated bibliography. The sections devoted to Geography (p. 53–102), Hydrography (p. 152–154) and Meteorology (p. 163–165) would be of interest to the meteorologist. Approximately fifty items deal with the climate of the area. Citations are from English, French, German, Italian, Polish and Arabic sources. *Subject Headings:* **Meteorology, Bibliographies, Sudan.**—*M.L.R.*

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section are for information only, and will not be listed in the monthly indexes until abstracted. When material is furnished in advance of data of publication, the pagination may be omitted.

Akademiia Nauk, SSSR, Izvestiia, Seriia Geograficheskaia i Geofizicheskaia, Volume 15, Number 1, 1951.

Tverskaia, N. P.: **Temperatura ispariaiushchikhsia kapel',** [Temperature of evaporating drops], p. 74–81.

Aĭzenshtat, B. A.: **O teplovom balanse podstilaiushcheĭ poverkhnosti v Tashkente,** [Heat balance of the overlying surface in Tashkent], p. 82–86.

Akademiia Nauk, SSSR, Izvestiia, Seriia Geofizicheskaia, Number 2, 1951.

Kachurin, L. G.: **Zamerzanie monodispersnykh vodnykh aerozoleĭ,** [Freezing of monodisperse aqueous aerosols], p. 43–49.

Kachurin, L. G.: **Zamerzanie polidispersnykh vodnykh aerozoleĭ,** [Freezing of polydisperse aqueous aerosols], p. 50–55.

Vulfson, N. I.: **Raschet nezonal'nogo sluchaia statsionarnoĭ tsirkuliatsii atmosfery,** [Calculation of the non-zonal case of stationary atmospheric circulation], p. 56–74.

Akademiia Nauk, SSSR, Izvestiia, Seriia Geofizicheskaia, Number 3, 1951.

Obukhov, A. M.: **Kharakteristiki mikrostruktury vetra v prizemnom sloe atmosfery,** [Characteristic microstructure of winds in the layer of air near the ground], p. 49–68.

Kuznetsov, E. S.: **Luchistoe ravnovesie gazovoĭ obolochki, okruzhaiushcheĭ absoliutno chernuiu sferu,** [Radiation balance of a gaseous envelope surrounded by an absolute black sphere], p. 69–93.

Akademiia Nauk, SSSR, Izvestiia, Seriia Geofizicheskaia, Number 4, July–August 1951.

Kuznetsov, E. S.: **Obshchiĭ metod postroeniia priblizhennykh uravneniĭ perenosa luchistoĭ energii,** [General method of construction of the approximate equations of transfer of radiant energy], p. 71–91.

Feĭgel'son, E. M.: **Radiatsionnye svoĭstva oblakov St.,** [Radiational characteristics of St. clouds], p. 92–117.

American Geophysical Union, Transactions, Volume 32, Number 4, August 1951.

Karapiperis, Photios P.: **The influence of ground condition and cloudiness on the diurnal march of surface vapor pressure at Blue Hill, Milton, Massachusetts,** p. 547–551.

Wilson, W. S.: **Surface ozone at college, Alaska,** p. 552–554.

Stommel, Henry and Woodcock, Alfred H.: **Diurnal heating of the surface of the Gulf of Mexico in the spring of 1942,** p. 565–571.

Fries, Carl, Jr. and Gutiérrez, Celedonio: **Activity of Paricutin Volcano from July 1 to December 31, 1950,** p. 572–581.

Reeve, Ronald C. and Kirkham, Don: **Soil anisotropy and some field methods for measuring permeability,** p. 582–590.

Edson, Charles Grant: **Parameters for relating unit hydrographs to watershed characteristics,** p. 591–596.

Merriam, Carroll F.: **Evaluation of two elements affecting the characteristics of the recession curve,** p. 597–600.

Hemel en Dampkring, Volume 49, Number 9, 1951.

Levert, C.: **Weeroverzicht Juni 1951,** [Weather summary June 1951], p. 147.

Delver, A.: **De windhozen van 23 Augustus 1950,** [The tornado of Aug. 23, 1950], p. 148–157.

van der Bul, W.: **Sir Arthur Schuster, Geo-en Astrofysicus 1851–1934,** [Sir Arthur Schuster, Geophysicist and Astrophysicist], p. 157–158.

Nabetrachting over de bolbliksem van Lutjewolde, [Reconsideration of the ball-lightning at Lutjewolde], p. 158.
Levert, C.: **Heeft Maart negen zomerse dagen?** [Did March have nine summary days], p. 159.
Levert, C.: **Een zeldzaam zware slagregen,** [An unusually heavy shower], p. 159.
Groen, P.: **In memoriam Vilhelm Bjerknes,** [Obituary of Vilhelm Bjerknes], p. 160.

Marine Observer, Volume 29, Number 154, October, 1951.

Special long-service awards to Marine Observer, p. 204.
The Marine Observers' log—October, November and December, p. 206.
Hill, M. N.: **Deep sea prospecting,** p. 221.
A Polar exhibition on board the "Discovery," p. 230.
Retirement of Dr. H. Jameson, p. 232.
Spare time at sea, p. 235.
Radley, J. R.: **Experiences of typhoons on the China Coast,** p. 237.
Institute of Navigation, p. 241.
Royal Meteorological Society—Presidential address, p. 242.
Philpott, L. B.: **Log books,** p. 244.
van der Tuuk Adriani, P.: **The Netherlands weather ships,** p. 249.
Association of navigation schools, p. 252
Across deep waters, p. 253.
Ocean weather ships, p. 254.
Southern ice reports, p. 255.

Meteorological Magazine, London, Volume 80, Number 951, September 1951.

Dewar, D.: **First year of upper air observations by ocean weather ships,** p. 245.
Shellard, H. C., and Grant, D. R.: **Results of an artificial nucleation experiment,** p. 253.
Saunders, W. E. and Summersby, W. D.: **Fog at Northolt Airport,** p. 255.
Bannon, J. K.: **Severe turbulence encountered by aircraft near jet streams,** p. 262.
Gordon, A. K.: **Adaptation of mechanical sorting and calculating machines to research in marine meteorology,** p. 269.
Letter to the Editor:
Jones, R. F.: **Rain from non-freezing clouds,** p. 273.
Notes and News:
Weather control bill, p. 274.

Meteorological Society of Japan, Journal, 2nd Ser., Volume 29, Number 7, July 1951.

Gambo, K.: **Notes on the energy dispersion in the atmosphere,** p. 215–232.
Takeda, K.: **On the atmospheric turbulence, 2nd paper. (On the generalized exponential formula),** p. 233–245.
Inoue, E.: **On the turbulent diffusion in the atmosphere (II),** p. 246–254.

La Météorologie, Ser. 4, Number 21, January–March 1951.

Roulleau, J.: **La recherche en météorologie,** [Research in meteorology], p. 1–5.
Grisollet, H.: **Caractères statistiques des relations de température entre saisons consécutives, à Paris,** [Statistical characteristics of the relations of temperature between consecutive seasons at Paris], p. 6–18.
Poisson, R. P.: **Sur l'audibilité du tonnerre à Tananarive,** [Audibility of thunder at Tananarive], p. 19–25.
Montain, J.: **Note sur les latitudes (sic) des bases et sommets des cumulonimbus tropicaux,** [On the altitudes of the bases and tops of tropical cumulonimbus clouds], p. 26–31.
Guilmet, B. and Zonzon, J.: **Note sur la météorologie tropicale,** [Note on tropical meteorology], p. 32–48.
Rougetet, E. and Bourgeois, M.: **Indices de micro-climat à Toulon,** [Microclimatic indexes at Toulon], p. 49–54.
Simon, A.: **Brève étude climatologique de l'année 1950 en Egypte,** [Brief climatological study of the year 1950 in Egypt], p. 55–56.

Monthly Weather Review, Volume 79, Number 6, June 1951.

Gentry, Robert C.: **Forecasting the formation and movement of the Cedar Keys hurricane, September 1–7, 1950,** p. 107–115.
Schmidt, Reinhart, C.: **A method of forecasting precipitation 28–40 hours in advance during October,** p. 116–124.

Clem, LeRoy H.: **The weather and circulation of June 1951,** p. 125–128.
Carr, J. A.: **Snow and record cold in Wyoming and Montana, June 1–3, 1951,** p. 129–132.

Monthly Weather Review, Volume 79, Number 7, July 1951.

Goldman, Louis: **On forecasting ceiling lowering during continuous rain,** p. 133–142.
Oliver, Vincent J.: **The weather and circulation of July 1951,** p. 143–146.
Carr, J. A.: **Some aspects of the heavy rains over eastern Kansas, July 10–13, 1951,** p. 147–152.

Papers in Meteorology and Geophysics, Volume 2, Number 1, March 1951.

Arakawa, A.: **Analysis of the tropopause and the stratospheric field of temperature of a mature typhoon,** p. 1–5.
Takahashi, K. and Collaborators: **Studies on the seasonal weather forecasting,** p. 6–29.
Takeuchi, M.: **On the influence of mountain ranges on the cold front and masked phenomena of cold air masses,** p. 30–39.
Arakawa, H. and Tsutsumi, K.: **Interdiurnal temperature variabilities in Japan,** p. 40–44.
Oosawa, K.: **A normal broad-weather cycle in the "Baiu," the rainy season in Japan,** p. 45–51.
Sato, T.: **On the equations of stationary motion,** p. 52–57.
Takeuchi, M.: **Notes on the influence of motion on the temperature lapse rate and on the stability of dry and moist air,** p. 58–64.
Arakawa, H.: **Bernoullian surfaces in meteorology,** p. 65–66.
Itoo, Kyôji: **Phenomena of ice crystals in the air,** p. 67–75.
Naito, K.: **On a method of preventing the ground-reflected wave effect in Rawin observation,** p. 76–84.
Hatakeyama, H. and Uchikawa, K.: **On the disturbance of the atmospheric potential gradient caused by the eruption-smoke of the Volcano Aso,** p. 85–89.
Kamiyama, K., Suzuki, T. and Kawamori, M.: **A survey on the dwelling conditions of community houses from the climatological point of view,** p. 90–94.
Miyake, Y.: **The possibility and the allowable limit of formation of air bubbles in the sea,** p. 95–101.
Nannichi, T.: **On the fluctuation of the Kurosiwo and the Oyasiwo,** p. 102–111.

Rivista di Meteorologia Aeronautica, Volume 10, Number 4, October–December 1950.

Bilancini, Raoul: **L'aumento della temperatura della terra,** [The increase of the temperature of the earth], p. 3–16.
Affronti, Filippo: **La "Nuvola pendente" discorso meteorologico nel "Museo di fisica e di esperienze,"** [The "Nuvola pendente" meteorological discourse in "Museo di fisica e di esperienze"], p. 17–23.
Mennella, Cristoforo: **Sulle formazioni nuvolose dell'epomeo (Isola d'Ischia),** [On the cloud formations on Mt. Epomeo Isle of Ischia], p. 24–29.
di Benedetto, Felice: **Sulla riduzione della pressione vera al livello del mare,** [On the reduction of true pressure to sea level], p. 30–33.
Pozzo, Franco: **A proposito della stazione di "Pian Rosà,"** [A proposal for a station on the Rosa Plateau], p. 36.

Weather, Volume 6, Number 9, September 1951.

Watson-Watt, Sir Robert: **Forecasting the weather,** p. 259–261.
Forrest, J. S.: **Weather and electrical research,** p. 262–266.
Wood, J. S.: **I'll go higher than you,** p. 267–276.
Taverner, L. E.: **Rainfall reliability in Dorset,** p. 276.
Botley, C. M.: **Lightning discharge in myth and legend,** p. 277–279.

LIST OF PERIODICALS

Note: This list contains the titles of the periodicals which regularly contain material on meteorology or related fields and it comprises only a small percentage of the periodicals from which pertinent articles are abstracted.

In this list the preferred form of title entry is given in bold face type. If the title is distinctive, the name and headquarters of the issuing society or organizations follows the title. If the title is not distinctive (for instance, Bulletin, Journal, Trudy, Mitteilungen), the entry consists of the issuing body followed by the title.

PERIODICALS IN WHICH METEOROLOGICAL ARTICLES REGULARLY APPEAR

Académie des Sciences, Paris, Comptes Rendus.
Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. and **Ser. Geofiz.**, [Moscow].
American Geophysical Union, Transactions, National Research Council, Washington.
★**American Meteorological Society, Bulletin,** [Boston].
★**Annalen der Meteorologie,** Meteorologisches Amt für Nordwestdeutschland, Hamburg.
Annali di Geofisica, Istituto Nazionale di Geofisica, [Rome].
★**Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A and Ser. B,** [Vienna].
Australian Journal of Scientific Research, Ser. A, Physical Sciences, [Melbourne].
Ciel et Terre, Société Belge d'Astronomie, de Météorologie et de Physique du Globe.
Geofisica Pura e Applicata, Istituto Geofisica Italiano, [Milan].
Geophysical Magazine, [Central Meteorological Observatory, Toyko]
Hemel en Dampkring, Nederlandse Vereniging voor Weer- en Sterrenkunde, [The Hague].
★**Időjárás,** Az Országos Meteorológiai és Földmágnességi Intézet, [Budapest].
★**Indian Journal of Meteorology and Geophysics,** [Delhi].
Journal of Atmospheric and Terrestrial Physics, [London].
Journal of Geophysical Research, [Washington].
★**Journal of Meteorology,** American Meteorological Society, [Boston].
★**Journal Scientifique de la Météorologie,** Société Météorologique de France, [Paris].
★**The Marine Observer,** Air Ministry, Meteorological Office, London.
★**The Meteorological Magazine,** Air Ministry, Meteorological Office, London.
★**Meteorological Society of Japan, Journal,** Second Series, Kisho Shushi, [Tokyo].
★**Meteorologické Zprávy,** Státní Meteorologický ústav v Praze, [Prague].
★**La Météorologie,** Société Météorologique de France, [Paris]
★**Meteorologische Rundschau,** [Bad-Kissingen]
Meteoros, [Buenos Aires].
★**Monthly Weather Review,** U. S. Weather Bureau, Washington, D. C.
Nature, [London].
★**Nimbus,** Sociedad Meteorológica de Bolivia, [La Paz].
Polarforschung, Archiv für Polarforschung in Kiel, [Kiel, British Zone, Germany].
★**Revista Meteorológica,** Junta Nacional de Meteorología, Montevideo.
★**Rivista di Meteorologia Aeronautica,** Associazione Culturale Aeronautica, [Rome].
★**Royal Meteorological Society, Quarterly Journal,** [London].
Royal Society of London, Proceedings, Ser. B.
★**Tellus,** Svenska Geofysiska Föreningen, Stockholm.
Vsesoiuznoe Geograficheskoe Obshchestvo, SSSR, Izvestiia, [Moscow-Leningrad].
★**Weather,** Royal Meteorological Society, [London].
★**Weather Development and Research Bulletin,** Australia, Meteorological Branch, [Melbourne].
★**Weatherwise,** Amateur Weathermen of America, Philadelphia.
★**Wetter und Leben,** Österreichische Gesellschaft für Meteorologie, [Vienna].
★**Zeitschrift für Meteorologie,** Meteorologisches Observatorium, [Potsdam].

★ Indicates those periodicals which are primarily meteorological.

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